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MARCH 2007

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This logo indicates a free, complete and unrestricted software package, available only on *APC*'s cover DVD.

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apc editorial

TONY SARNO

We recently moved offices, and in the course of packing and throwing things out, we finally found a piece of history that we feared had been lost forever: a copy of the very first *APC* magazine, published in May 1980. It was a major find. In nearly 30 years of publishing, whatever copies were kept of the very first magazine had gradually disappeared, until, incredibly, we no longer could find any. So when our DVD Editor, Lachlan Grant, found a copy in an old box, there was some quiet celebration (and then it was quickly locked away in a safe place). But that wasn't all. We also discovered another milestone magazine, the first *APC* with a disc on the cover. Except, this was a floppy disk. We all had a good laugh at the 5.25 floppy, especially when someone remarked that there was no way we'd be able to fit a Linux distro on it.

The archaeological finds showed more than ever how long *APC* has been around — and that it's always lived by a tradition of constant improvement. Even as recently as last year, we introduced several new sections in the magazine, such as End User, Exploding Tech and OS Challenge.

We continue the improvements in 2007. If you're familiar with our Labs section, it normally features reviews and comparisons. From this issue, we're introducing a regular, in-depth review that will run over several pages. First to get the treatment is Office 2007, the Microsoft suite whose interface has been so dramatically changed from the previous version that it will come as a shock to you. In fact, its open source competitor, OpenOffice 2.0, is far more like the Office we know than Microsoft's new version. Since Office 2007 is big and disruptive, it needs some good going over.

So, in addition to the extended review, we also feature Office in a new section of the magazine called Insight (see page 96).

If you're familiar with our news, features, reviews and tutorial sections, Insight breaks the mould. It's not a review or a tutorial project or an advice column, but simply a thorough look at a new product or piece of software (or its key features) that are relevant to a particular group of users. Office has spawned an industry of developers, so we've looked at what Office 2007 means for developers.

Overall, we see 2007 as the year in which we serve you better with more in-depth information. If our internet site is where *APC* is the first to bring you technical insights on the new key PC, OS and networking technologies, the magazine will increasingly be the place where you get more considered, in-depth reports on the technologies that matter.

tsarno@acpmagazines.com.au

OFFICE 2007 HAS BEEN SO DRAMATICALLY CHANGED FROM THE PREVIOUS VERSION THAT IT WILL COME AS A SHOCK TO YOU

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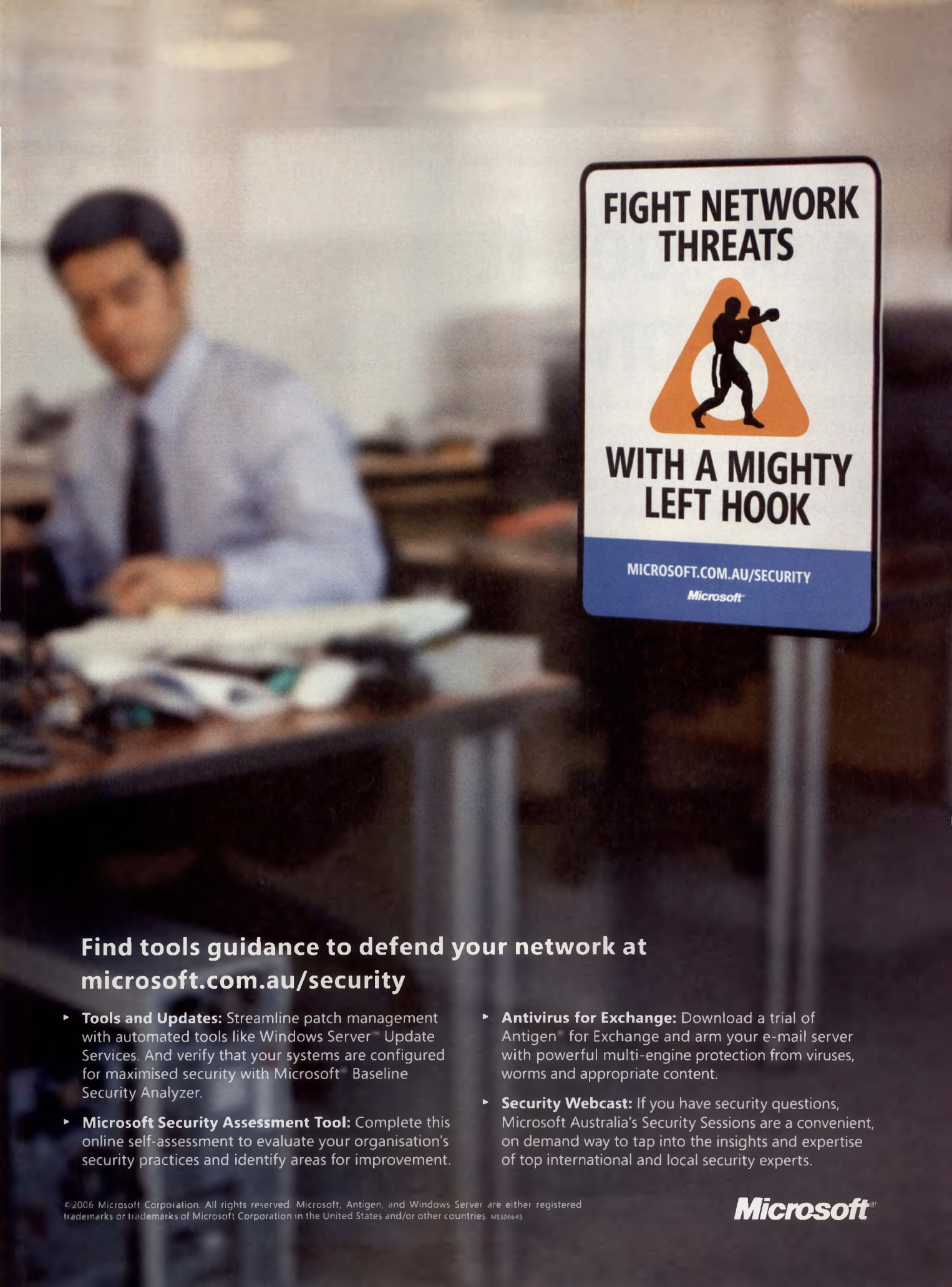

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- **Security Webcast:** If you have security questions, Microsoft Australia's Security Sessions are a convenient, on demand way to tap into the insights and expertise of top international and local security experts.

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Microsoft®

Intel goes it alone on 802.11n

Intel has given up on the standards squabbles over faster wireless. Next-gen Centrino notebooks will ship with Draft-N wireless rather than the final spec, *David Flynn* reports.

The draft version of 802.11n wireless looks set to become the de facto industry standard, with Intel upgrading its new Centrino platform (codenamed "Santa Rosa" and due for launch in April) to include a Draft-N wireless chip.

802.11n shares the same frequency as the .11b and .11g flavours of Wi-Fi, but uses advanced techniques such as multiple signals directed through several antennas (multiple-input multiple-output, or MIMO) to achieve a theoretical data rate of 540MB/s along with extended range.

However, while the first .11n working group was formed in January 2004, it took two years for the Wi-Fi Alliance industry group to agree to a single draft version of the protocol in January 2006, and the final version is not expected to be approved until April 2008.

"Normally we would wait for the final signature, but then the Wi-Fi Alliance said that the final signature of the draft by the IEEE was delayed," Mooly Eden, general manager for Intel's Mobile Platforms Group told *APC*.

"So we said, 'Guys, it doesn't make sense to hold it any more, let's share it.' We're working with all the access point providers and doing interoperability tests with everyone, even our competitors, to deliver a good interoperability experience, which was not the case with the first .11n specification on the market.

"With .11n we can get up to 300MB/s, so it's a much better solution either for people who care about range or people who want to stream content."

Most manufacturers of networking hardware have already introduced products designed around the Draft-N standard, while Acer, Dell, HP and Lenovo have already begun shipping notebooks in the US equipped with internal Draft-N mini-cards.

Unlike earlier implementations, which adopted a proprietary mix of .11n technology (and in some cases were sold as "Pre-N") that proved incompatible with similar products from other vendors, the groundswell in support of Draft-N is based on all manufacturers working off the official Draft-N spec.

However, there's no guarantee that current Draft-N equipment will be fully compatible with the final version of 802.11n. "We believe it will be," Eden suggests, "but I cannot commit to something which is a future specification — there's a reason it's called 'draft'."

For full details on the next-generation Centrino platform, see our feature on page 16.

Australia won't see iPhone till 2008

Salivating over the Apple iPhone? Lick your chops — you've got a long wait ahead.

Apple unveiled the iPhone at Macworld San Francisco in January. There are two versions: 4GB (US$499) or 8GB (US$599), and the phone can play iTunes music, videos and photos, and display Dashboard widgets. It has a 3.5in touchscreen (which doubles as the keypad) and, amazingly, runs OS X. This allows it to run Apple's excellent Safari web browser and a mail client similar to Apple Mail.

It also packs Wi-Fi and Bluetooth, but doesn't support 3G networks — Apple has opted for 2.5G "EDGE", which runs at about 100Kbit/s and is available through Telstra. On other Australian networks, it will only operate at GPRS speed — about 40Kbit/s. Apple says it plans to add 3G.

It'll be released in the US in June (Apple hasn't even got FCC approval for the hardware yet, such is Jobs' focus on secrecy), then in Europe "later in the year" and Asia Pacific in 2008.

Of course, that's not to say it won't be available around the world on the grey market at inflated prices as soon as it goes on sale in the US. However, Apple won't be selling them directly — they'll only be available through US mobile network Cingular on two-year contracts (which might foil amateur exporters).

Dan Warne

OPTICAL WARS: ATTACK OF THE HYBRIDS

The HD-DVD and Blu-ray standoff seems to be coming to an end, with the announcement of both dual-format discs and hybrid players.

The saga of the optical format stoush between Blu-ray (Sony) and HD-DVD (Toshiba) has simultaneously gained two plot twists. Together, these might be enough to silence the giants duking it out for optical standard supremacy.

Either that, or LG is in for some trouble, as it has created what the duelling giants might consider a Franken-drive: a hybrid optical drive for the PC that supports both HD-DVD and Blu-ray media, and also the usuals, covering all the angles of DVD and CD media.

Featuring a Serial ATA interface, LG lovingly calls its hybrid drive the "Super Multi Blue", or "GGW-H10N" for short (possibly vice versa). It can read and write all supported formats except for HD-DVD, which it can only read.

The Super Multi Blue drive will be available by March and priced "under US$1,200".

The second plot twist is that Warner Brothers has finalised a new optical disc that can hold both Blu-ray and HD-DVD content at the same time.

The new hybrid media, dubbed "Total HD", will play in both HD-DVD and Blu-ray players.

It wouldn't be difficult for Sony and Toshiba *et al* to thwart this format. Speculatively, they could make their decoders check the disc for the competing format and refuse to read the media on that basis.

With no obvious winner in sight for the next-generation optical storage medium, it remains to be seen whether LG's hybrid drive or Warner Brothers' optical medium is enough to pick up steam in the HD arena.

The introduction of both a hybrid drive and a hybrid medium of the two competing standards will either bring relief to the situation or further confuse consumers, especially with what is essentially a third next-generation format.

Meanwhile, the trusty DVD soldiers on.

Nathan Davis

Origami reshaped

OK, so ultra-mobile PCs flopped. It's time for "take two", but nobody can agree on which OS to use. *David Flynn* reports.

Get ready for a second wave of ultra-mobile PCs (UMPCs) — with up to three Microsoft OSs to choose from.

The Redmond colossus is predictably touting Vista as the ideal OS for the mini-tablet devices (already nicknamed "Vistagami"). These will make use of the tablet functionality that's now integrated into the core of the OS, along with additional tablet-friendly tweaks to the interface and applications.

However, even allowing for Intel's advances in producing low-power Core 2 processors, it's unlikely that Vista UMPCs will make serious headway in addressing the platform's triple-flaw in being overpriced, underpowered and suffering from almost laughable battery life.

Several OEMs are still producing models based on Windows XP, citing their targets as vertical and enterprise segments, which are in no hurry to introduce Vista into their IT mix.

The surprise entry into the UMPC market has been Taiwanese-based HTC, producing an estimated 80% of the world's Windows-powered smartphones and PDAs including models for HP, i-mate, O2, T-Mobile and Cingular (alongside its house brands Qtek and Dopod).

HTC's "Athena" prototype runs Windows Mobile OS. The result is a pen-operated device which is more like a super-sized PDA complete with 5in display, detachable keyboard and 8GB solid-state flash drive. In addition to 802.11g and Bluetooth, rumours suggest the device will support 3G and HSDPA, based on HTC's expertise in the mobile phone arena.

Athena is expected to be available to HTC's OEM customers in early 2007. This will tie into the release date for Windows Mobile 6, codenamed "Crossbow", which is expected to sport a Vista-like UI with improved mobile messaging and VoIP support plus remote search-and-retrieve of Exchange Server 2007 mailboxes. Crossbow's companion "Pocket Office" suite is tipped to introduce native support for the XML-based file formats of Office 2007.

Taking a more convential route, OQO's Vista UMPC includes a 5in display, 1.5GHz VIA ULV processor, 60GB hard drive and 1GB RAM.

March 1987

THE (A)PC REVOLUTION

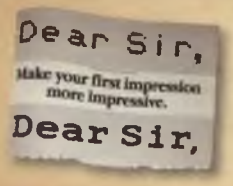
NEW IBM-COMPATIBLE MAC TESTED

At the heart of the Macintosh II sits a Motorola 68020, a true 32-bit CPU cracking along at 15.7MHz. These true supermicros are beloved of scientists, engineers and other computer-aided design boffins.

AST research in the US has already announced the IBM-compatible board for the Macintosh II, jointly developed with Phoenix and Apple, which allows the user to run MS-DOS applications in a window – much like the Amiga sidecar.

DEGAS ELITE ART DIRECTOR

A finished interior design which features several pattern fills and a wide range of colours. Details to enhance the image (the technical term is "finishing") and other changes were made using the ordinary drawing facilities that are contained within Degas Elite.



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Microsoft	Windows XP Professional

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Processor	Core 2 Duo 64-Bit / Core Duo
Memory	Up to 4GB 533/667MHz DDR2
Display	Optional LCD / Plasma TV
Graphics	Intel / ATI X1300 / ATI X1600 HDMI
Microsoft	Windows XP Media Centre

DreamBook Tough 230

RRP from **$5599**

Processor	Intel Core Duo
Memory	Up to 2GB 533MHz DDR2
Display	14.1"/15" SXGA TFT Screen
Graphics	Integrated / ATI Radeon 128MB
Microsoft	Windows XP Home

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Is your mobile Vista-compatible?

Many major phone manufacturers won't be Vista-ready until mid-year, *Tim Gaden* reports.

The consumer release of Windows Vista and Office 2007 at the end of January seems to have surprised many leading mobile phone manufacturers. In some cases, companies will not have Vista-compatible sync software ready for their handsets until the middle of the year.

Among the major brands, only i-mate phones are ready for the new software.

It is difficult to understand the cause of these delays. Vista betas were available throughout the second half of last year, with the "Release to Manufacturer" version available since last November.

All the companies confirmed that business customers were important to them and agreed that these users value the ability to sync their phone with their PC, but they were unable or unwilling to explain why these same users will need to wait for months for compatible software to appear on shelves.

❶ PALM

Palm could not provide any indication about when its phones and handhelds would be ready to talk to Vista, saying only "Palm will release details on product compatibility with Vista after testing has been completed. At that time, Palm will provide detailed product information and instructions for users on compatibility requirements."

❷ MOTOROLA

Motorola users are also out of luck. "Microsoft is a great partner," the company waxes, "and we've been working with them on an ongoing basis for mobile devices, but we have nothing to share at this time."

❸ I-MATE

A spokesperson for the company told *APC* that i-mate has been working closely with Microsoft to ensure that Vista's release would mean "no change for our customers". Its ActiveSync software, based on Windows Mobile technology, is already fully Vista-compatible.

❹ BLACKBERRY

RIM will make BlackBerry users wait a little longer. It has an update in development designed to work with both Vista and Office 2007 which will be released "in the first half of 2007". All BlackBerry handsets will talk to the new Microsoft software once the updates are applied.

❺ NOKIA

Nokia users fare slightly better. Its PC Suite software will be updated by the end of April, after which any N- or E-series phone (and most models with a number higher than 6000) will be able to sync with Vista and Office 2007.

❻ SONY ERICSSON

After days of prodding head office to no avail, a spokesperson for Sony Ericsson in Australia said that the company was "unsure at the moment" about when its customers will have Vista-compatible software.

❼ SAMSUNG

Samsung users will also be able to sync with Vista after April, although users with phones purchased before then will need to download an additional driver from Samsung's web site.

inbrief

APPLE TV

Apple has launched the media extender device it previewed last year. The Apple "TV" is half the height of a Mac mini, has a 40GB hard drive and streams H.264 video as well as all iTunes music formats. It works with both Windows and Mac, and will sell for $449. It's of limited value in Australia, though, since we don't yet have TV shows or movie downloads from iTunes.

32GB FLASH HARD DRIVE

SanDisk has announced it will be manufacturing a 32GB flash memory hard disk for laptop owners who want minimal power consumption and the reassurance of no moving parts. It's substantially cheaper than previous efforts at flash hard drives; however, the US$800 price tag means it's doubtful that it'll find its way into notebook manufacturing lines in a hurry.

FANCY A DOCK?

Belkin has reinvented the proprietary notebook dock of yesteryear: its new Express Dock works with any brand of laptop as long as it runs Windows and includes an ExpressCard slot. The dock includes a video card that allows your notebook to run a second monitor at full frame rate (via VGA or DVI), as well as five USB 2.0 ports, FireWire, digital audio out (S/PDIF), standard analogue sound in stereo or 5.1 and 100Mbit/s Ethernet.

Extreme geek

How to cool a PC with a swimming pool

Eric Buehl is possibly the only person alive with an Intel-heated pool.

Carnegie Mellon University computer science student Eric Buehl was hanging out by the pool with his Dad.

"My father and I joked about using the pool as a reservoir/heatsink, and the more we talked about it the more we realized this just might work," Eric says. US$400 ($513) and some do-it-yourself plumbing work later, and it *does* work, delivering "cooler, quieter computers and [possibly] warmer pool water with very little extra cost and added energy savings."

Eric got the idea from shortcomings with existing commercial water-cooling kits: "These always seemed kind of stupid to me, since they only moved heat from the inside of the case to the outside, essentially taking advantage of a larger heatsink outside the case. These often require fans and radiators, so they aren't any quieter. I wanted a way to actually move the heat outside to cut down on air conditioning needs."

So, he tapped into the existing plumbing in the family pool, inserting a check valve into the pipes for the pool filter and then connected piping into the house.

The most difficult part of the whole operation was placing the pump for the computer cooling system below the water level of the pool, to ensure that the computers never ran dry. He ran 1/2in PVC lines through the attic of the house and constructed the exposed manifold for the four computers that use this system out of 1/2in copper piping with six sets of 3/8in hose barbs.

The system has been working without a hitch since August last year and has delivered on all his goals: "Every machine on the line happily operates somewhere between 30-40C, depending on the water temperature. Most of the fans in each machine have either been removed or disconnected, making it much quieter. Additionally, the entire room is cooler, without the need for air conditioning. Success!"

See the full setup at **www.thebuehls.com/pool_cooling**.

Tim Gaden

"Don't worry mum, I'll fill in the trench once the pipes are installed."

Eric and his swimming pool-cooled setup, which is now running hitch-free.

HOW GEEKY ARE YOU?

Have you wired up your car? Shared your home media library with five family members in three states? Made a 16-terabyte file server? If you've done something interesting with computing technology, *APC* wants to hear about it. Email a description of your project to dwayne@apcmagazines.com.au and include photos (we need at least one of you pictured with your gear). This month's Extreme Geek wins a copy of Mindscape's FloorPlan 3D Version 11 (Metric) (worth $69.95). This is the ultimate home design CAD program you can use to design or remodel parts of your home. You can draw and edit walls more easily with its new wall snapping tool, which shows where walls intersect. FloorPlan 3D Version 11 comes with extensive remoddling materials. The program generates photorealistic surfaces and advanced lighting effects. Visit *www.mindscape.net.au* for more info.

Dream system

Diamonds are forever, until the next CPU architecture comes out.

Dutch company Ego makes the perfect accessory for your diamond-encrusted iPod case — a diamond-encrusted laptop.

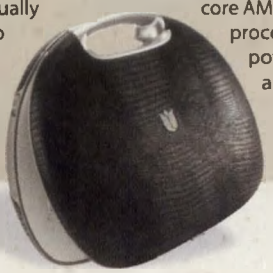
The top-of-the-range Otazu Ego Diamond retails for the cool price of US$350,000 ($449,294). Prize-winning European jeweller Rodrigo Otazu took a break from designing baubles for Britney Spears in order to create the casing, which is crafted in hand-made black leather with 470 (4.7 carat) Top Wesselton V.S. diamonds in an 18 carat white gold setting.

The laptop weighs in at 2.58kg and features a 12.1in WXGA screen (1,280 x 800), an ATI Radeon Xpress 200M graphics chipset, a front-loading DVD/CD burner, 1GB DDR RAM, a 4-in-1 card reader and an 80GB hard drive.

Celebrities who find actual computing intellectually draining can use the laptop to play DVDs instead.

An estimated battery life of three hours will last you almost two feature films. Connectivity is provided by built-in 801.11a/b/g Wi-Fi and Bluetooth 2.0. It won't scream along: the CPU is a single-core AMD Turion Mobile processor, but potential buyers are likely to have a lot of time on their hands.

Tim Gaden



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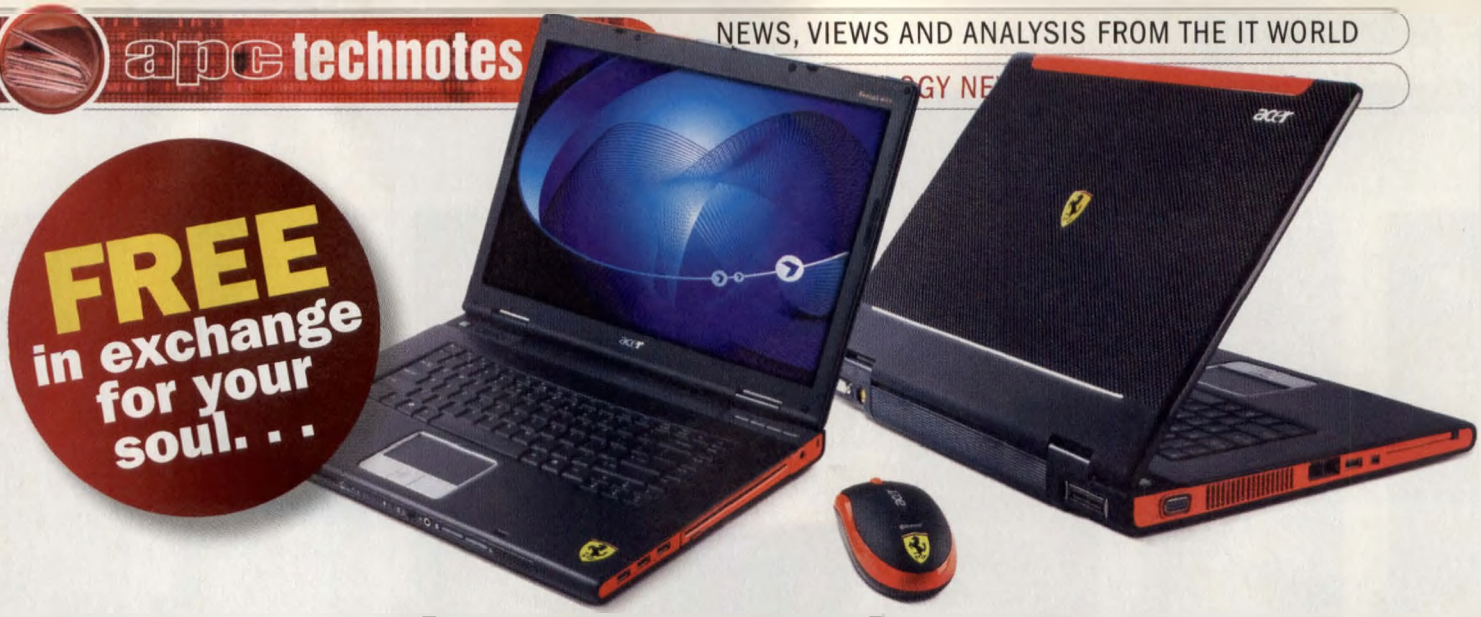


Microsoft Ferraris for bloggers

The software giant has come under fire for giving bloggers top-of-the-line Acer Ferrari notebooks loaded with Vista, just before launch, reports *Dan Warne*.

Melbourne blogger Long Zheng (**www.istartedsomething.com**) broke the news that he and 90 other bloggers had been offered the laptops or high-spec media centres to keep as a gift from Microsoft.

The resulting scandal polarised bloggers and their readers: some argued that all big companies give out gifts to "influence the influencers", while others felt that bloggers should uphold some ethics and decline high-value gifts.

Microsoft neither makes nor sells notebook computers, which makes the gift seem suspicious. Many news reports called it nothing more than a bribe, "blogola" or "laptops for comment".

Microsoft denied that the laptops were a bribe, arguing it simply wanted to give bloggers the best experience using Vista. It said it was up to the bloggers to decide whether to send the laptops back to Microsoft, give them away to their readers, or keep them.

"Sorry, but that's a ridiculous argument," said one reader of Zheng's blog, JasonMR. "Sounds like giving a wad of cash to a copper [wink, wink], asking them to check if they are fakes, and then leaving it up to them to decide to either keep them for personal use or hand them back — and then say that it was not a case of bribing a police officer."

Most tech publications send back expensive review units to manufacturers after review. *APC* does sometimes keep PC components couriered directly from overseas and inexpensive items for use in ongoing testing with other products.

Some bloggers say the gifts are evidence of a well-orchestrated plan to manipulate bloggers that now hold significant influence in the tech community.

There is some evidence to support this theory. In 1996 during a speech to members of Microsoft's developer relations group, Microsoft technical evangelist James Plamondon said: "All through this presentation previously, I talked about how you're using the pawns and you're going to screw them if they don't do what you want, and dah-dah-dah. You can't let them feel like that. If they feel like that, you've lost from the beginning. . . So you can't let them feel like pawns, no matter how much they really are."

Next-gen flash memory

It's 500 times faster — and it's all thanks to the germanium-antimony semiconductor material.

Scientists from IBM, Macronix and Qimonda have jointly developed a new kind of non-volatile memory that could replace existing flash memory.

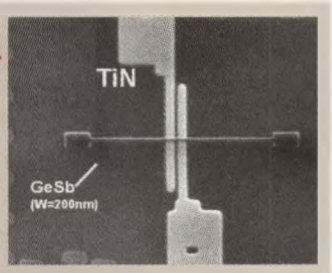
The new memory, which uses phase-change technologies, is much faster than current flash memory and can be scaled into smaller form factors.

A prototype built by the group switched 500 times faster than conventional flash memory and required half the power to write to the memory cells. The prototype also shows potential to scale down to use a 22nm production process, which is two generations smaller than what's currently possible. This improvement in speed and potential capacity may be the breakthrough needed to standardise non-volatile memory, away from the current bewildering array of memory standards.

The phase-change technology uses a chunk of germanium-antimony (GeSb) semiconductor alloy that can be switched between a crystalline phase, which has lower electrical resistance, to a disordered amorphous phase, which also has much higher electrical resistance.

Since no power is needed to maintain either phase, the phase-change memory is non-volatile. The downside of such memory is that it's a thousand times slower than normal computer memory, which is why its use in computing has been limited to devices that use batteries.

Current flash memory solutions also have an intrinsic limitation in the number of times that they can be written to — and while 100,000 writes may sound sufficient, this figure quickly becomes a major limitation for any form of caching — which is a common occurrence in normal computing.



An Electron microscope image of the prototype phase-change memory cell.

Current flash memory uses a "floating gate" charge-storing cell that's designed not to leak, which means that the memory stores data even when power isn't available (and indeed only requires power when the memory is written to or read from).

Green legislation will bite

Tech companies aren't taking environmental legislation seriously — and we'll all pay the price.

The IT industry is facing price rises and component shortages as the new environmental legislation bites, warns analyst firm Gartner.

As new laws take effect around the world in 2007 and beyond, tech firms face serious problems if they don't get their environmental houses in order.

Green legislation should mean an end to e-waste dumps in Asia and Africa, where toxic chemical cocktails poison both workers and the environment with substances including heavy metals.

However, loopholes in the legislation are being widely exploited. While the EU's 2006 Restriction of Hazardous Substances (RoHS) legislation bans the use of six hazardous chemicals, many hardware products are exempt until 2010.

The EU RoHS legislation affects other parts of the world, including Australia, because many electronic product lines are distributed worldwide and therefore must be RoHS-compliant.

However, under RoHS, lead solder is still permitted in servers, storage and network infrastructure equipment; and lead is permissible in glass for CRTs and electronic components. As a consequence, equipment containing banned substances can still be sold legally, but it's RoHS-exempt rather than RoHS-compliant.

Gartner reports that only 43 per cent of the world's PCs are affected by RoHS, so firms are running "green" and "non-green" production lines to keep costs down or, in the case of firms that don't sell to Europe, ignoring the RoHS altogether.

That could be an expensive mistake: China introduces its own, tougher RoHS rules in March, and other countries may follow suit.

If firms ignore environmental issues until legislation affects them, they face expensive last-minute changes to ensure compliance, and that could lead to shortages and higher prices.

However, even those that have already gone green still face higher costs.

The UK's long-delayed implementation of the WEEE (Waste Electrical and Electronic Equipment) directive will finally become law in July and will compel companies that import, manufacture or rebrand electrical equipment to finance its recovery, recycling or disposal. It would be naive to expect firms to absorb those costs without passing them on to customers.

The cost of components will also rise as new legislation is introduced globally. China's RoHS rules will mean price hikes for PCBs: according to Global Sources' China Sourcing Report, 24 per cent of Chinese and Hong Kong PCB firms and 33 per cent of Taiwanese PCB firms expect to raise prices by 10 per cent in the next three months, with more price hikes to follow.

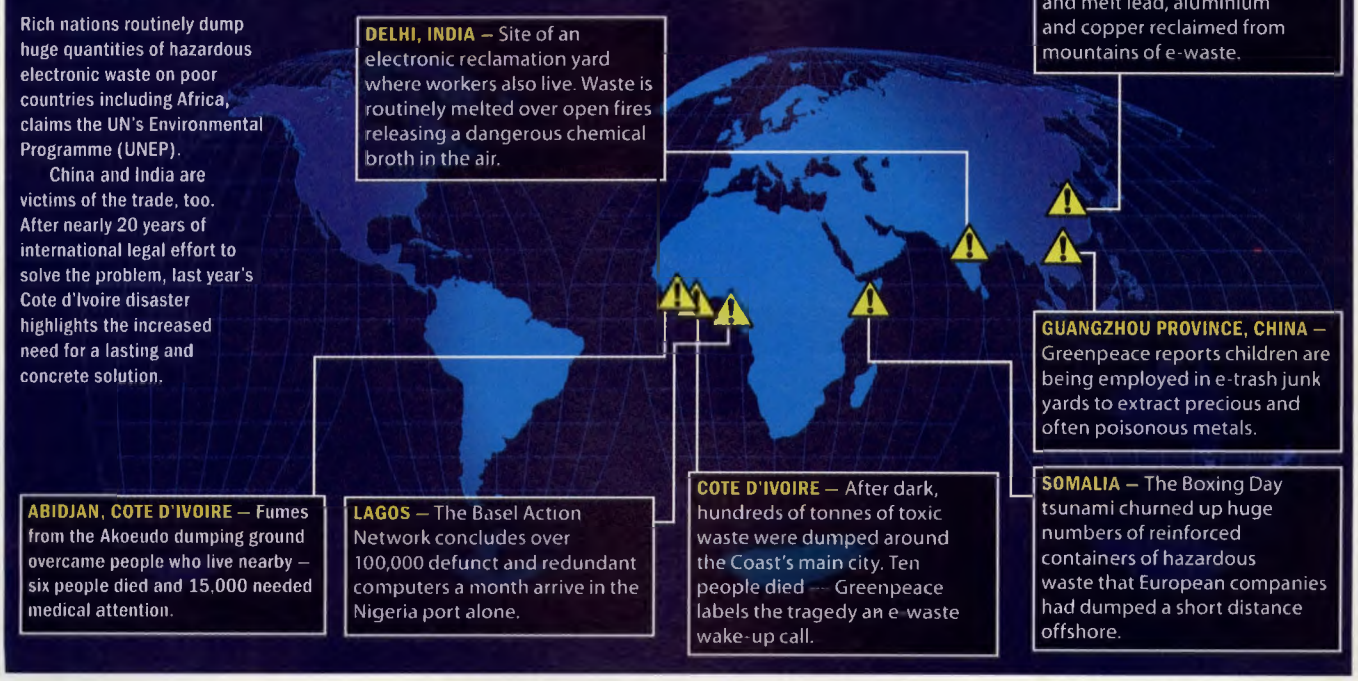
As hardware costs rise, the cost of using it is likely to increase too. The Energy Savings Trust reports that 43 per cent of us believe bans or "green taxes" would be justified for inefficient electronic devices.

U.N. WARNS OF E-WASTE MOUNTING

Before you throw out old hardware, spare a thought for where it may end up.

Rich nations routinely dump huge quantities of hazardous electronic waste on poor countries including Africa, claims the UN's Environmental Programme (UNEP).

China and India are victims of the trade, too. After nearly 20 years of international legal effort to solve the problem, last year's Cote d'Ivoire disaster highlights the increased need for a lasting and concrete solution.


DELHI, INDIA – Site of an electronic reclamation yard where workers also live. Waste is routinely melted over open fires releasing a dangerous chemical broth in the air.
ZHEJIANG PROVINCE CHINA – Migrant workers with no protective clothing extract and melt lead, aluminium and copper reclaimed from mountains of e-waste.
GUANGZHOU PROVINCE, CHINA – Greenpeace reports children are being employed in e-trash junk yards to extract precious and often poisonous metals.
SOMALIA – The Boxing Day tsunami churned up huge numbers of reinforced containers of hazardous waste that European companies had dumped a short distance offshore.
COTE D'IVOIRE – After dark, hundreds of tonnes of toxic waste were dumped around the Coast's main city. Ten people died — Greenpeace labels the tragedy an e-waste wake-up call.
LAGOS – The Basel Action Network concludes over 100,000 defunct and redundant computers a month arrive in the Nigeria port alone.
ABIDJAN, COTE D'IVOIRE – Fumes from the Akoeudo dumping ground overcame people who live nearby – six people died and 15,000 needed medical attention.

INSIDE Intel's next-gen Centrino

Intel plans to advance the Centrino architecture in three stages.

High-speed Wi-Fi, WiMAX, 45nm processors and flash-enhanced hard drives — *David Flynn* looks at what's on the menu for this year's Centrino notebooks.

Four years after the debut of the Pentium M and the original Centrino laptops, Intel is gearing up for a total overhaul of its notebook platform that will extend through to 2008.

The chipmaker plans to advance the Centrino architecture in three stages. The first wave is the release of the fourth-generation Centrino platform, codenamed Santa Rosa, in April.

Santa Rosa will inherit some technology from the current Centrino Duo series, such as the 64-bit Core 2 Duo processors, but add DirectX 10 graphics and Draft N wireless, along with enterprise-class vPro technology to create an offshoot "Centrino Pro" line.

This will also lay the foundations for a refresh of the platform towards the end of 2007, which will introduce the first 45nm processor and optional WiMAX.

By the middle of 2008, Santa Rosa will make way for "Montevina", the fifth generation of Centrino, which will sport inbuilt WiMax and also — possibly — a quad-core mobile processor.

Here's what we know about the tech that's taking shape inside your next laptop.

MEROM AND BEYOND

Santa Rosa notebooks will be built around a revised version of Intel's 64-bit "Merom" mobile Core 2 processor, which touched down as part of the Core 2 launch during the middle of 2006.

While those chips were designed as drop-in replacements for the "Yonah" series of 65nm Core processors in order to speed OEM uptake and ease their transition to the new Core 2 architecture, the second series of Merom processors will lift the frontside bus speed from 667MHz to 800MHz. "We will be using an improved version of Merom, but with new features that are enabled only on Santa Rosa," according to Mooly Eden, general manager for Intel's Mobile Platforms Group.

One of these is the scaleable FSB which drops from 800MHz to 400MHz when on battery power. Current Core 2 Duo notebooks reduce their CPU frequency and voltage when unplugged, but the FSB continues to gallop along at full speed. By halving FSB and CPU speed during idle times, Santa Rosa notebooks should be able to squeeze more from the battery.

As with the current T5x00 and T7x00 series of Core 2 chips, the new processors are expected to be available in versions with 2MB (in the T7100 line) and 4MB (T7300, T7500 and T7700) of shared Level 2 cache. While there's no word if CPU speeds will be lifted from today's 2.33GHz threshold, we'd be surprised if Intel didn't wind the wick up to at least 2.5GHz.

Intel will also release low voltage (L7x00) and ultra-low voltage (U7x00) variants of Merom clocked from 1GHz to 1.6GHz.

Towards the end of 2007, Santa Rosa will be updated with Intel's first chip cut to a smaller yet more power-efficient 45nm die. These "Penryn" processors will have their cache boosted to 3MB and 6MB, and are tipped to include the first quad-core notebook CPU within their lifetime.

CRESTLINE: DIRECTX 10 AND FLASH HDD

Some of the biggest advances in Santa Rosa are activated by the new Mobile 965 Express chipset family, codenamed Crestline and based on the current desktop 965

CENTRINO TURNS PRO

To capitalise on the growth of notebooks in the business market (and promote Intel's vPro enterprise platform), an enhanced version of the Santa Rosa spec will be marketed as a mobile version of vPro.

Tipped to be named "Centrino Pro", the platform mandates a 64-bit chip with support for advanced remote management and built-in virtualisation technology, plus Gigabit networking.

"We want to extend the vPro technology for manageability and security from the enterprise desktop to the notebook," explains Shmuel (Mooly) Eden. "If you have the notebook unwired, you'll be able to get the majority of experiences you can get from a vPro desktop; if you have it wired, you get everything."

"There will be two platforms and they will be branded slightly differently," Eden says. "The consumer is more engaged by the graphics and the video experience. To the enterprise user, the form factor, long battery life, security and manageability are more important. If you look at many of our OEMs today, like Toshiba, Dell and HP, they already have a different line of products for the consumer and the enterprise."

HERE'S WHAT WE KNOW ABOUT THE TECH THAT'S TAKING SHAPE INSIDE YOUR NEXT LAPTOP

Express chipsets and GMA X3000 integrated graphics engine.

"The Crestline driver is going to be DirectX 10, so this will be the first integrated graphics with DirectX 10 support," says Eden. "And it can access the memory and deliver the data to the CPU in a much faster manner, to remove any bottleneck from the faster microprocessor."

Crestline will also support Intel's "Robson" technology, which uses 256MB or more of NAND flash memory as an onboard hard disk cache as well as protected storage for system and application files. The aim is to dramatically boost startup, standby and resume times, as well as extend battery life by reducing hard drive access.

While Robson supports Windows Vista's SuperFetch, ReadyBoost and ReadyDrive features, it won't be a standard item in the Santa Rosa recipe. "You'll see many systems with Robson, because it enables us to accelerate performance and save battery life, but it will not be mandatory," says Eden. Robson's cache configurations range from 128MB to 4GB, so notebook makers will be free to choose how much memory they install.

WIRELESS TO THE MAX

More significantly, Santa Rosa opens the way for a wireless troika of Wi-Fi for local networks, HSDPA-enhanced 3G for mobile services and the long-awaited city-wide broadband coverage of WiMAX.

As reported on page 8, Santa Rosa's wireless module (codenamed "Kedron") will add support for the draft version of 802.11n Wi-Fi, ahead of the final 11n spec being approved in April next year.

While 802.11n will be baked into Centrino's silicon, support for WiMAX and 3G HSDPA (High-Speed Downlink Packet Access) won't be on the menu when Santa Rosa launches in April.

HSDPA will be an option available to OEMs, rather than a must-have component of Intel's mandated Centrino platform, and will be available "as a mini-card, not an integrated chip," Eden told *APC*. Nokia will provide the plug-in module, but it's not known if the radio will be built to the HSDPA 1.8Mbit/s or 3.6Mbit/s spec.

WiMAX is further down the track. "When Santa Rosa begins, we will not have a WiMAX solution," says Eden. Although Intel has completed design on its WiMAX Connection 2300 chipset, which combines Wi-Fi and WiMAX into a single slab, testing and validation means that full production of both ExpressCards and motherboard modules won't ramp up until late 2007.

"We're now doing the trials of the transmitter, and at the end of 2007 it will fit into Santa Rosa — but it won't be integrated, it will be an add-on card," advises Eden, in another indication of a mid-life refresh for Santa Rosa. "The next-generation platform (codenamed "Montevida") will have a built-in WiMAX solution in all the notebooks, so you'll see initial notebooks with an add-on card by the end of 2007, but millions of notebooks with integrated WiMAX in 2008." APC

Santa Rosa notebooks ought to be able to squeeze more juice out of their batteries.

Ditto

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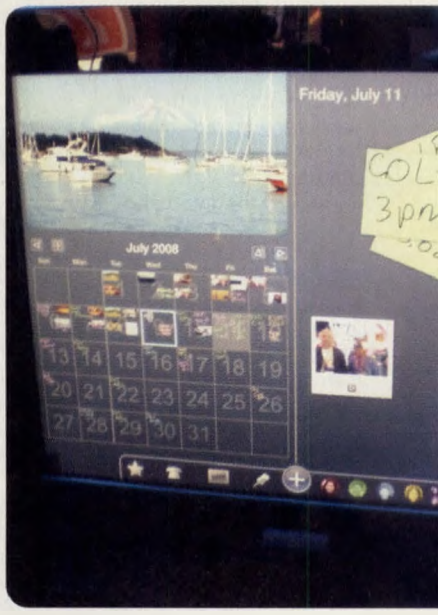


10 crucial TRENDS FROM CES

The screens were bigger, the networks were faster and the celebrities were non-existent. Here's everything you need to know about CES, the world's biggest gadget and geek gathering. *Angus Kidman* reports.

Much of the annual coverage of the Consumer Electronics Show (CES) in Las Vegas is centred around a manic search to find the hit product of the show, as if an event involving more people than the population of Darwin can somehow be summarised in a single gadget.

For the most part, this completely misses the point and suggests an unpleasant degree of naivety. If companies actually want to get noticed at CES amongst the other 2,700 exhibitors and 140,000+ attendees, they generally have to leak news of their plans well in advance — a strategy deployed with some success this year by LG, whose SuperMultiBlue Blu-ray/HD-DVD combo player was the subject of much ill-considered praise (a point we'll return to later).

In any case, single products aren't really of much note, especially since a hefty percentage of them will never reach Australian shores anyway. It's far more revealing to observe the key trends which represent bigger shifts in the industry.

If every single company is producing media centre PCs, then it's safe to assume we're going to be bombarded with them. (Whether we buy them is another question, naturally.) With that in mind, here are the ten dominant themes which emerged at the 2007 show this January.

EVERYONE LOVES YOUTUBE, BUT NO-ONE KNOWS QUITE WHAT'S NEXT

Despite inviting Disney CEO Bob Iger and CBS network chief Leslie Moonves to give keynotes, no-one really seemed to give a damn about paid-for or free content from major providers. Instead, the content provider everyone wanted to talk about was YouTube. Consumer Electronics Association (CEA) head Gary Shapiro proclaimed YouTube one of the "stars of 2006", and YouTube co-founder Chad Hurley made a highly scripted appearance during Moonves' speech. Vendors also raced to make video from their own keynotes available on YouTube — something that would have been hard to imagine a year ago.

Nonetheless, just how YouTube will fit into the future landscape is uncertain, since its lo-res amateur ethos seems to signal an opposing direction to the otherwise relentless obsession with high-definition content. There were some nibbles: Netgear used the show to launch a media extender with native YouTube support and HD output (and hinted at further partnerships in the future). There's certainly a market there. Research by the CEA suggests that as many people are interested in YouTube access as in console gaming.

HOW WE'LL SPREAD TELEVISION AROUND THE HOME IS ANYBODY'S GUESS

Media centre PCs are doing much better stateside than locally (no doubt having a freely available EPG helps), but there's still a long way to go before they can claim supremacy as a TV distribution mechanism. Both Sony and Dell took the opportunity to debut new form factors for media centres (round and enormous, respectively), while Microsoft hedged its bets by launching Windows Home Server, which centralises backup and management for those homes that have gone the multi-PC route.

Media extenders were also omnipresent, with several companies touting their support for the not-quite-done 802.11n standard as providing a step up to high-definition content, including Linksys, whose Gaming Router looks somewhat more exciting than you'd expect from the title. Yet with just 40% of homes having any form of network, and just a quarter of those being wireless (according to the CEA), there's still a long way to go before everyone's bouncing media around their homes.

PROCESSOR MANUFACTURERS HAVE NOTHING NEW TO SAY

Last year Intel used CES to launch Viiv, while AMD jumped in and talked up its Live service. A year later, the same drum was being beaten by both companies, but without much in the way of substantial additions. Having spent much of the 2006 CES throwing barbed insults at Microsoft, Intel in particular was very quiet, with the most impressive technology on its stand being a prototype kitchen PC incorporating a camera,

a calendar and a virtual whiteboard — neat, but unfortunately with no plans for commercialisation.

THE HI-DEF DVD WARS ARE ANYTHING BUT OVER

Conventional wisdom holds that no-one is buying either Blu-ray or HD-DVD players because (a) they're too expensive, (b) there's not enough titles and (c) no-one wants to back the wrong horse. LG's SuperMultiBlue combo player doesn't solve any of those problems: it's also too expensive (US$1200), it doesn't actually implement the whole HD-DVD interface system or play audio CDs, and it doesn't make it any easier for movie studios to decide which horse to back. Both hi-def DVD camps held excitable press conferences at CES proclaiming the supremacy of their format — the bottom line seems to be that Blu-ray has gained something of a market edge since the release of the Sony PS3, but neither format is likely to overtake conventional DVD any time before the next CES, with just one million players expected to sell over 2007 in the US.

> PERHAPS FOR THE FIRST TIME IN LIVING MEMORY, GATES DIDN'T THROW A GRATUITOUS PLUG FOR TABLET PCS INTO HIS SPEECH

IT'S HARD TO GET EXCITED ABOUT VISTA

Microsoft founder Bill Gates devoted a good proportion of his opening keynote (by his reckoning, his penultimate appearance at CES) to talking up Vista, but after five years in development, it proved tricky to find new and useful features that could get the audience fired up. In the new tech field, Gates did announce the Home Server edition of Windows, but didn't risk an actual live demo.

Perhaps more notable was that, for the first time in living memory, Gates didn't throw a gratuitous plug for tablet PCs into his speech. Maybe he would have if he'd known Apple's Steve Jobs would be diving into touch-screen waters just two days later. Speaking of which...

THE IPHONE FAILED TO DISRUPT

This year, CES and Macworld clashed — rather than one following the other — either due to a booking glitch or a new Dan Brown-style conspiracy theory. As a result, plenty of people were hanging around on a Tuesday morning waiting for the word from San Francisco about the much-rumoured iPhone — though that didn't stop Michael Dell getting about the same number of people at his announcement-overlapping keynote speech as were projected to attend the entire Macworld conference.

In the end, the fact that the phone was announced a good six months before anyone could buy one even in the US meant that it hardly proved to be a show stopper. Lots of CES attendees are retailers, so vague future prototypes aren't particularly enticing, no matter how appealing the package. Cisco's Linksys division, meanwhile, spent plenty of time demonstrating its own iPhone VoIP product (and suing Apple for using its trademark as a side dish).

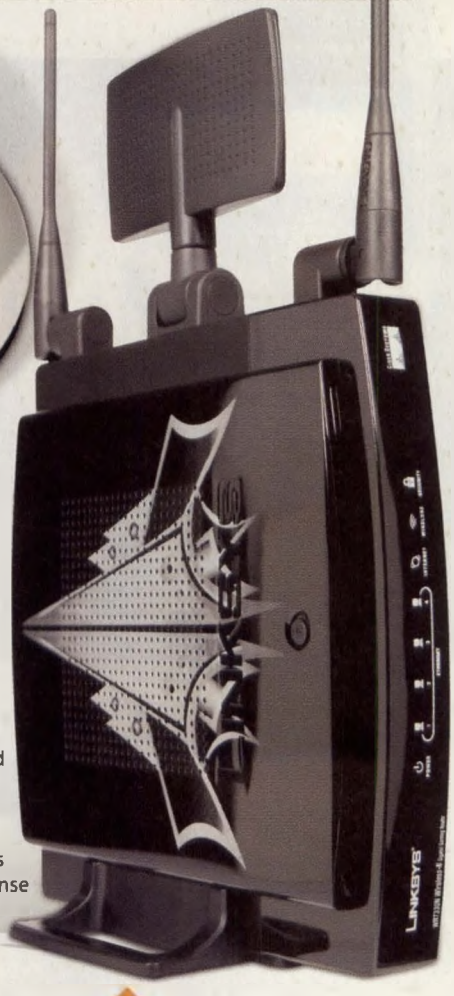
CELEBRITY SPRUIKING IS OUT

CES promoted itself this year as the event "where stars come out to play", but compared to last year's line-up of surprise appearances (Toms Cruise and Hanks, Morgan Freeman, Dan Brown, Robin Williams, Ellen DeGeneres), there was nothing much to get excited about in the CES sandpit this year. Even the presence of two media giants (Disney and CBS) didn't add to the celebrity count, with *Lost*'s Matthew Fox and Evangeline Lily being probably the only people that would be recognisable to a non-US audience. It seems 2007 was the year the stars decided to go out and play somewhere else, and a good case could be made that

Netgear's new Digital Entertainer HD streams Youtube videos to your home theatre.

With the HD-DVD wars still in full swing, don't hold out for a resolution any time soon.

Australian company Cylo Technology hit paydirt, finding a US peripheral distributor.



Linksys was showing off its new wireless gaming router.

DELL ALSO ENTERED THE FRAY WITH ITS BIGGEST-EVER MONITOR THAT CAN RUN OFF A SINGLE DVI OUTPUT

the most famous person appearing on any CES stage was the hardly surprising Bill Gates.

Of course, the focus of the show should be on technology anyway, but with a fame count so out of whack with the show's promotion, it's no wonder that the door managers at the Adult Entertainment Expo (being staged adjacent to CES) spent much of their time turning away geeks who had calculated the only way to get a dose of celebrity was by checking out the porn stars.

SCREENS ARE STILL LUDICROUSLY LARGE — AND LCD IS KING

Name a major display manufacturer, and chances are they were announcing a screen that was 50 inches or more in size. Sharp took the award for biggest screen on display (a whopping 108in), while Philips garnered a reputation for ostentation after showing a one-off Ambilight TV studded with 2,250 diamonds. Dell also entered the fray with its biggest-ever monitor that can run off a single DVI output — 27 inches, with a 2,560 x 1,600 resolution. Market stats suggest that most of the growth in the future will come from LCD displays rather than plasma, though neither is going to be disappearing from your local electronics retailer any time soon. The most impressive future display technology was Sony's OLED, which allows displays to be less than a centimetre thick. Sadly, the company doesn't yet have a timeline for commercial release.

AUSTRALIAN COMPANIES DON'T FANCY LAUNCHING CONSUMER PRODUCTS MUCH

Australian companies were more visible at CES than ever, with nine companies grouped together on a special Australian stand organised by Austrade, and another nine exhibiting on their own. For the most part, however, those companies were looking to either license their technologies to a larger firm, or to find a US distributor that could carry much of the load. A typical example was Sydney's Cylo Technology, which came to CES seeking a development partner for its 3Style 3D mouse (and lined up a meeting with a major peripherals manufacturer on the very first day of the show).

AUSTRALIAN CONSUMERS ARE LOW ON THE PRIORITY LIST

It's a perennial-but-real whinge about CES — despite the word "International" being officially slapped in front of the title, a good number of the goods on display will never spread beyond American shores (or will arrive here months after their US release). The trend to bundle services and content with hardware has made this even more prevalent. Although CES isn't alone in this (Apple iPhone, anyone?), it's a trend that deserves to end. APC

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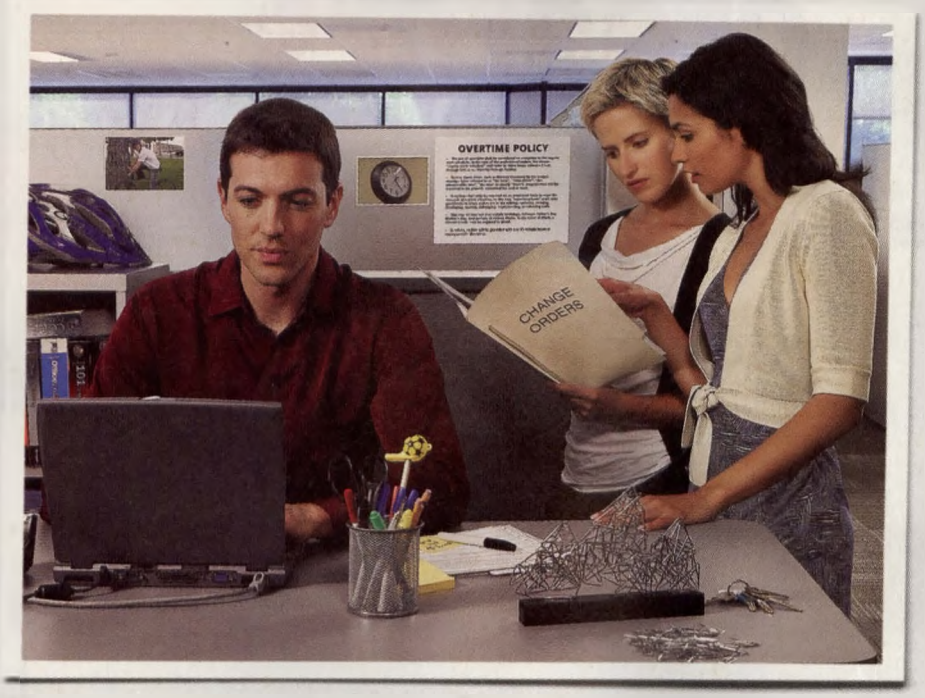

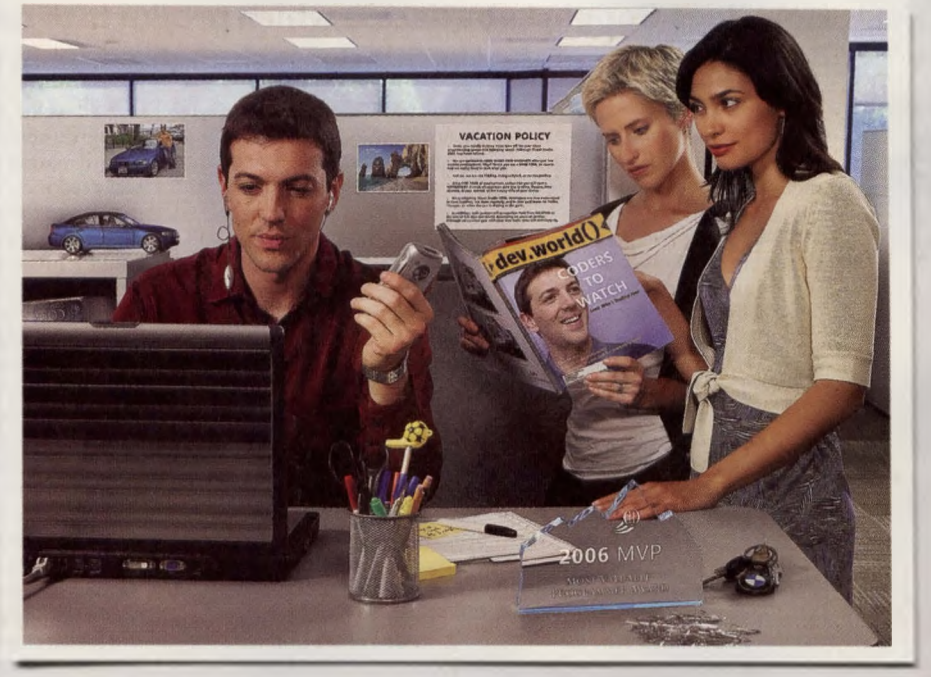

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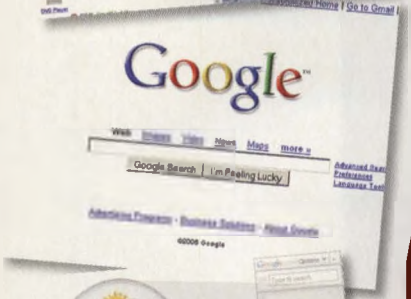


THE creators

INSIDE GOOGLE LABS

How does Google Labs decide which products to develop? *APC's John Brandon* asks Sundar Pichai, the man in charge.

Sundar Pichai is the director of product management at Google, overseeing Google Labs and various development teams and projects. Google Labs is the portion of the company that develops unique applications and services, such as Picasa, Gmail, Google Reader and Google Maps.

APC: The Google mission statement is to organise the world's information and make it universally accessible and useful. Yet, Picasa, Google Spreadsheet and Blogger seem to be out of those bounds. How do you explain the discrepancy?

Sundar Pichai: Our mission has more to do with information than just search. Search is a much narrower definition. Our mission is to make information universally accessible. If you think about information like photos — today, if you go and look in your computer, I'm willing to bet that most of your hard drive is being consumed by photos, which is an important part of your information. The way we view it is, there are all kinds of information: local information, information on your desktop, information out on the web, things you want to share, and all of this is blurring. You want to take things on your desktop and share it with the world. Likewise, you want to consume things on the web and use them on your desktop. We approach this from the standpoint of, how do we enable or empower the user to consume information, to find and contain information and share information?

APC: One of the common criticisms of Google services like Gmail or Picasa is that they force people to search rather than put things in folders, which is what people are familiar with.

SP: I would argue that you should do both. We do have a bias toward making information very easily searchable. Having said that, I think the web equivalent of categorising information is tagging. In Gmail, you can use labels; in Picasa, you can tag pictures. I won't argue with you that it's not quite folders, but some of the labels are even more powerful. You can take something and give it six labels, but putting it into six folders is quite difficult.

APC: How do you figure out what users want?

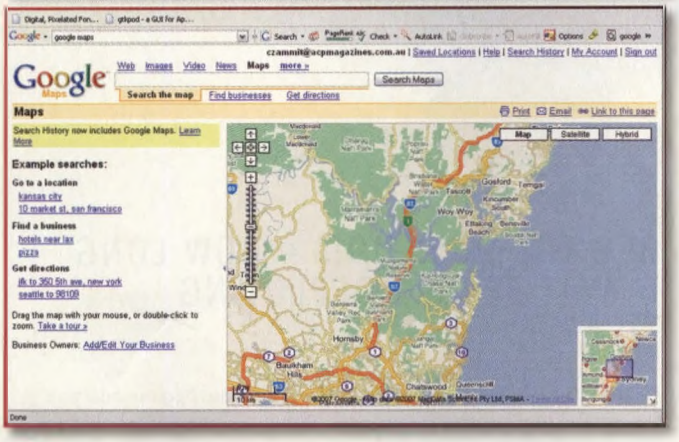
SP: Google is obviously successful at developing software through an ad hoc, grassroots method. New products take on a loyal following almost immediately, and feedback is fast and furious. In recent months, Microsoft has adopted a similar approach with Live.com and even the Microsoft Office 2007 series of products, which any user can freely download

> WE HAVE PRODUCTS WE NEED TO GROW. I DON'T WANT TO CALL THEM FAILURES YET

GOOGLING THE FUTURE

Future integration? During the interview, Pichai noted that the model for future integration is the new links in Gmail, which the company added in mid 2006. Users can click on links for search, Calendar, Docs and Spreadsheets, and Groups. Adding these links was the result of intense debate within the company. Even though it's a minor change, it does point to a developing strategy, where each service references another service. For example, Maps might integrate with the RSS Reader. And, each service has its own search. In Gmail, for example, once you start tagging messages, you can easily search for them. These are the hints to the company strategy: integrated services, search within each product and fewer cryptic commands, such as the Google search syntax. Pichai agreed that each service will evolve – and will look and function differently in five years.

Google aims to integrate services into "one box" — Google Calendar will tightly integrate with Gmail, while Google Talk is effectively integrated into Gmail.



"It's a pleasant surprise to see how Google Maps took off, even before we released the API, there were exceptional mash-ups appearing on the web."

Picasa

Gmail by Google

and use for months without paying any fees. The Microsoft CTP or Community Technology Preview program seeks to solicit feedback from real users who will probably buy the product eventually. The real question, though, is whether this model really works for other companies, considering that Google never charges for any of its web products and garners most of its income from those who visit a site, chat in forums and download a product.

APC: Google products tend to draw a large crowd and one that sticks around. Are they all expected to be a hit with users?

SP: It's quite the opposite: we expect a lot of them to wind up as features in existing products; some of them will end up as major products; a few of them won't make it past Google Labs.

APC: What are some of your successes and failures?

SP: That's the George Bush question! We do have failures, let me tell you that right away. But, I assume your question is beyond search, because we view search as successful. I think beyond search, even beyond core products like Google Maps, Google Earth, Google Toolbar, these are all widely adopted services. Google News. A lot of them are in the top of their category. Tuning our algorithms is a success story. Latency, how fast you serve results back.

And finally, user experience — you will see ongoing refinements. Either we understand if you are a fan of a certain football team and show you news about that. Or, if I am a Mac user and I type Panther, it should show you different information than if I am a fan of a football team named Panthers.

APC: What about failures — services you had high hopes for but which did not reach success?

SP: There are quite a lot of products that we need to grow to achieve the success of our core products. I don't necessarily want to call them failures yet. I would not say they are proven successes though, either. Gmail is a groundbreaking product in terms of creating a paradigm shift in how email is done. But we are not the leading email product out there. We have a long way to go and we recognise that.

APC: For such a powerful company in the web, your look and feel is ultra-basic. Why is that?

SP: We care most about speed and latency. It's not uncommon, when people say we need to do something on this home page, for them to say that will add 4K.

APC: What is your feeling about mash-ups?

SP: It's a pleasant surprise to see how Google Maps took off, even before we released the API, there were exceptional mash-ups appearing on the web. We understand that we can't do everything internally at Google.

APC: Are there any particular mash-ups that you've seen that have impressed you?

SP: Yes. There's one that allows you to find apartments in San Francisco, based on Craigslist, overlaid on Google Maps. So you open a San Francisco map, go to the neighbourhood you want, click, and see all the available apartments in that area.

There's another one called Bus Monster (**www.busmonster.com**). You go to a map of Seattle and you can see all of the buses in Seattle in transit. It's all based on their estimated time of arrival and their normal routes. apc

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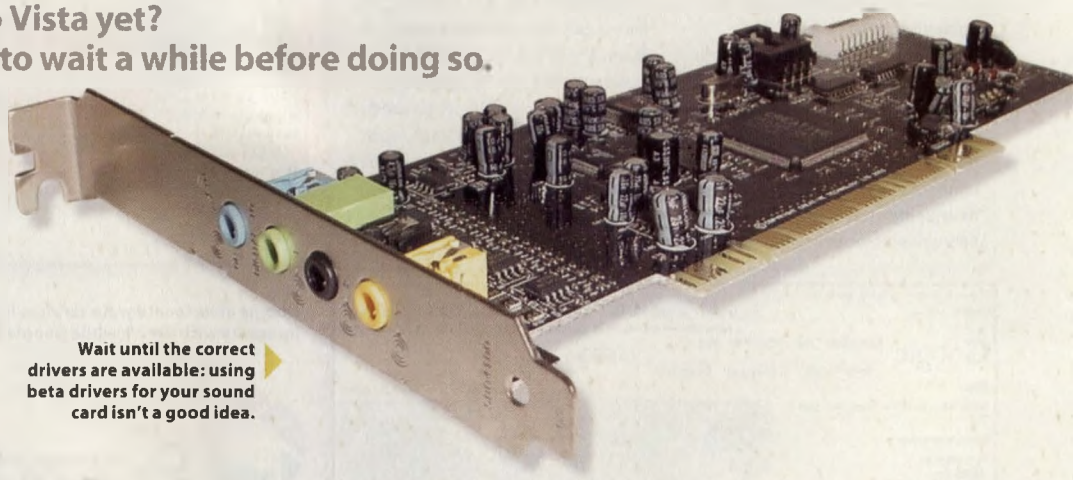
Hold your horses

Have you upgraded to Vista yet? If not, you might wish to wait a while before doing so.



Wait until the correct drivers are available: using beta drivers for your sound card isn't a good idea.

The problem with any new operating system is whether or not it supports everything you need. This isn't necessarily an indictment of the OS itself, but can indicate a problem with third party software and driver manufacturers. For example, Creative took an embarrassingly long time to make final-release Vista drivers available for its hardware after Vista RTM was released, especially considering the length of time the beta builds had been available. I was keen to upgrade to Vista as soon as the RTM became available, but with a Creative sound card, I wasn't about to rely on beta drivers on my primary system.

Other people have experienced similar problems with different hardware vendors, like SigmaTel and Logitech. But it's not always just a problem with drivers — software applications can be subject to the same compatibility issues. For example, if you have a few favourite apps at home which you use all the time, unless the vendor specifies that they *will* run on Windows Vista, then there's always the risk that they won't. We have found through hours of beta testing that, just because an application has been written for Windows XP, that's no guarantee of compatibility with Vista. Yes, you can certainly use Vista's compatibility tools and there's no denying that they are good, but for something you rely on every day, is it worth the risk?

THIS DOES BEG THE QUESTION – HOW LONG SHOULD YOU WAIT BEFORE DEPLOYING A SERVICE PACK?

For business users, there's a more compelling reason to hold off — Windows Vista SP1. The first hot fixes for Vista-based machines started appearing on Microsoft's web site shortly after RTM. This isn't too surprising — no matter how hard you test a new product, the best and most rigorous testing is done in the real world. However, businesses can't afford to jump straight onto the Vista bandwagon simply because it's out, new and shiny-bright. Codenamed Fiji, Vista SP1 is currently scheduled to be released in the second half of 2007 alongside Longhorn Server.

Many businesses often wait for the first full service pack of any new OS before deploying it, simply to get the benefit of other people's testing — after all, why deal with problems yourself when you can let someone else do it?

Vista SP1 will certainly incorporate a load of fixes, but it is also rumoured to have some fairly fundamental kernel updates, bringing it more into line with Longhorn Server. This is quite a significant change, and businesses would be well-advised to hold off any migration to Vista until the full implications of SP1 are realised. The situation is similar to when Windows XP SP2 was released. It incorporated such far-reaching and complex changes that many businesses waited a couple of years to deploy it. Some never did.

That does beg the question though — how long should you wait before deploying a service pack? Wait long enough to see what other people make of it and there'll be another service pack to replace it.

The best approach that I have found is to try and deploy new applications into an environment where problems have minimal impact. For example, find a group of users that are happy to be involved in an in-house beta program and get them to use the new software on a day-to-day basis. If something does go wrong, then at least they're aware of it, and can give you valuable feedback before deploying anything on a larger scale.

For home and business users alike, patience really is a virtue. APC

HastalaVista

by James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.

Solid Capacitors - Built to Last

Solid caps (capacitors) on GIGABYTE motherboards are better quality and more durable than ordinary electrolytic caps.

Without a doubt, solid caps will be one of the hottest (pun intended) new features on high-performance motherboards as PC users look for maximum longevity from their upgrade to Intel Quad Core optimized systems and Windows Vista. GIGABYTE is raising the bar for motherboard quality and reliability by using expensive Japanese solid caps on a full range of mainstream to enthusiast motherboards.

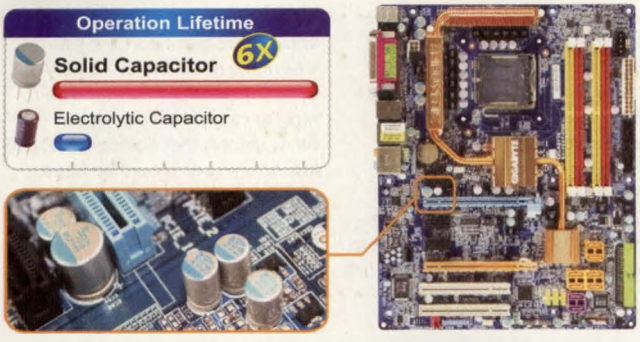
What is a capacitor?

Solid Capacitor Electrolytic Capacitor

Capacitors store electricity for other components on the motherboard and discharge it when needed. Solid capacitors contain a solid organic polymer, while electrolytic capacitors use a common liquid electrolyte.

Six times longer lifespan

At 65°C, the average lifespan for solid caps is more than six times longer than that of an electrolytic cap. This translates into around 23 years for solid caps and a mere 3 years for electrolytic caps.



Improved tolerance for high frequencies & temperatures

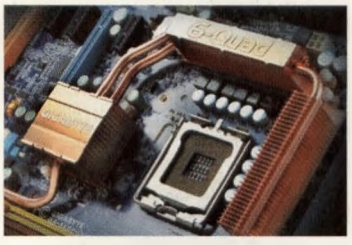
Solid capacitors have more tolerance than electrolytic capacitors for high temperatures, high frequencies and high current. In essence they have lower impedance (how much the capacitor impedes the flow of current) and generate less heat so they operate better under stressful conditions – this not only leads to a longer life span, but also increased stability and performance.

No more exploding capacitors

Today's PC enthusiasts and power users place increasing demands on their motherboards and hence, capacitors. Normal electrolytic caps have been known to bulge or swell, and in some cases leak fluid or explode/pop under constant stress, dramatically lowering system performance or worst case, damaging the motherboard.

As there is no liquid in the solid caps used on GIGABYTE motherboards, they don't leak or explode.

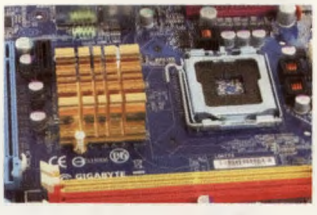
GIGABYTE Ultra Durable motherboards



* Certified for Windows Vista Premium meets Microsoft Windows Vista Premium requirements.
* For more information about the Certified for Windows Vista™ Premium models, please visit GIGABYTE website.

Ultra Durable motherboards from GIGABYTE are easily recognizable by the 'D' in their suffix. E.g. GA-965P-DQ6 or GA-945P-DS3. They cover the full spectrum of users from extreme enthusiasts using Intel quad core CPUs to mainstream users. In fact, **GIGABYTE is the first motherboard manufacturer to adopt all-solid caps on a full range of 945 chipset motherboards** as well as on all higher-end products to deliver maximum stability, reliability and longer system lifetime for the ultimate PC gaming and entertainment experience.

Solid Caps on GIGABYTE Quad Core Optimized Motherboards



Electrolytic Caps on other Motherboards

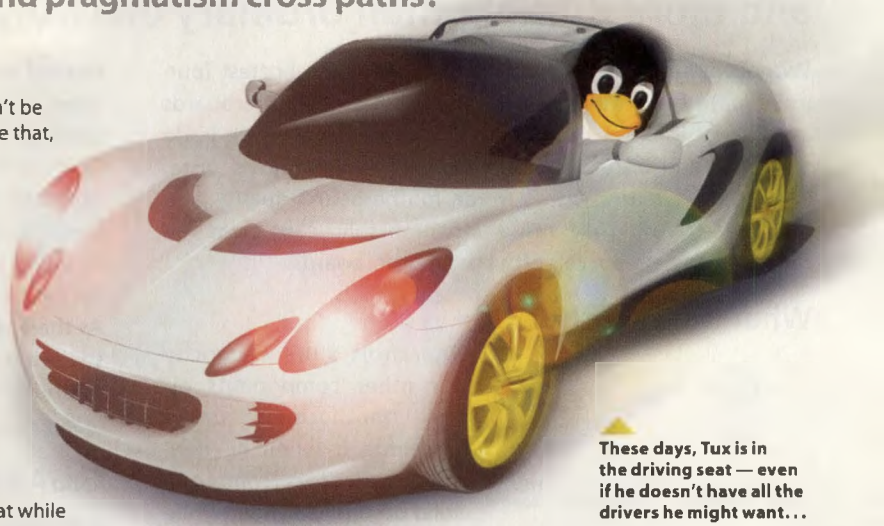
For more information on GIGABYTE Ultra Durable motherboards please visit the GIGABYTE website at:

http://www.gigabyte.com.tw/Products/Motherboard/Default.aspx.

GIGABYTE

The driver debate

What happens when philosophy and pragmatism cross paths? Just read the LKML to find out...



These days, Tux is in the driving seat — even if he doesn't have all the drivers he might want...

The Linux Kernel Mailing List (LKML) is a haven for some of the smartest developer minds on the planet. Discussions about code and kernel features are peppered with egos and moments of brilliance. It's a necessary forum for the free exchange of ideas.

One such idea that was recently put forward was for the Linux kernel to only accept GPLed modules, which would prevent the use of binary drivers, and do so by the end of the year. After all, Linux isn't some hobbyist operating system sitting in a niche in the corner anymore; it now has an audience so large it powers chunks of the web (and causes Microsoft to strike deals with Novell). The young penguin has grown up.

So, while the discussion itself was somewhat high-level, it could be summarised as: vendors that want their device support in the kernel better pony up and play by the rules — you want in? (Puts on best Tom Cruise voice: *Show us the source*!)

The idea gained traction, and another developer posted a patch to the kernel that would do exactly this and reject non-GPL modules. It would seem the kernel would soon be on a new path.

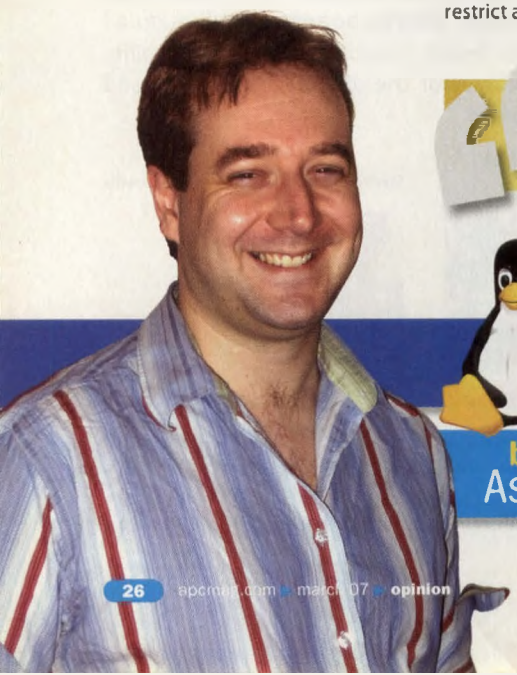
And then Linus appeared. And what did he say? In many more words than this — don't be ridiculous! And just like that, the idea was quashed (and the posted patch removed).

It's not just that Linus is respected for his opinion, or that he's the guardian of the kernel: it's simply that he was right.

Let's be clear a moment — there's a wide chasm between philosophy and pragmatism, and the bittersweet irony is that while pragmatism drives the present, philosophy frequently drives the future. After all, open source was exactly that, and it changed the world. But in the day-to-day operations, and with the kernel as example, people don't give a flying hoot if the driver comes with source code available and built into the kernel, or simply plugged in as a binary driver — they just want their machines to work. And to ignore this basic fact of your own user base is to stop growing and start shrinking. Well, that's my perspective — Linus' was more about not becoming the bad guys. How can you go off against companies like Microsoft or the media megacorps that control and restrict access to everything, and then run off and do the same? I, for one, am happy my system gets superfast 3D acceleration thanks to the binary-only Nvidia driver, and if this were to suddenly stop working in the kernel, I'd have one less reason to be using Linux. Do I agree with Nvidia's stance that it won't release drivers with source? Nope, but I'd rather a binary driver than no driver at all.

And of course, there's the twist that despite the absurd notions the philosophers sometimes put forward, it's these same notions that actually drive the next wave of development. You can be sure that when open source first started circling the globe as a concept a lot of people said "WTF?", and yet today it's a development model so potent even commercial software companies employ it to effect.

So, while Linus jumped into the discussion and dispersed a bit of clarity, it's not wrong the idea was put forward at all. The boundaries have to be pushed, and for all we know there may be a time soon where the necessity of a binary driver dissipates. And that'd be nice, because then perhaps all those drivers that don't exist due to locked-up specs could be freed, and the device support for Linux could increase (you listening Creative?) Yeah ok, we can dream. Or at least, bide our time. APC



DESPITE THE ABSURD NOTIONS PHILOSOPHERS PUT FORWARD, IT'S THIS THAT ACTUALLY DRIVES THE NEXT WAVE OF DEVELOPMENT

LinuxWindow

by Ashton Mills

Editor of the **Linux Pocketbooks** *series, and more recently* **Atomic** *magazine, Ashton has been a tech journo for over 12 years, including five years with* **APC**.

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Dumb and highly paid

Much of the aggravation experienced by IT support staff comes not from general employees, but managers, bureaucrats and even pilots.

Reader Ryan Leffler was providing IT support in the Australian Army when he set up a deployable LAN for use by his unit and by members of an Army aviation unit.

Leffler recalls: "I was sitting down monitoring the system when this overly confident pilot complete with aviator sunglasses and arrogant attitude asked me if I knew anything about computers. I said, 'a little,' and he replied, 'good, get over here and fix mine.' I went over to check out his computer. When I asked what the problem was, he said his PCMCIA card wasn't working. I took a quick look at it and noticed that it had been inserted upside down and jammed into the slot with considerable force.

"I asked him whether he was the one who had put the card in. He replied, 'Of course, why?'

"I took out a set of pliers and none-too-gently removed the mangled card from the computer. He had driven it in there with enough force to bend the card and snap all the pins off. I could only imagine what the inside of the slot looked like.

"I asked him if he was a pilot and he replied he was. In front of a room full of pilots and officers I then said: 'That's amazing because I never would have thought they'd let a moron like you fly a multi-million dollar aircraft and I will make sure that I will never fly on your helicopter,' and then I walked off. Surprisingly, I didn't end up getting my backside kicked for it."

> I NEVER WOULD HAVE THOUGHT THAT THEY WOULD LET A MORON LIKE YOU FLY A MULTI-MILLION DOLLAR AIRCRAFT!

STUPID FRONT APPROACHING

It's common sense that you unplug your PC when a major electrical storm hits, to avoid it being fried by any power surges coming down the line. But not even a cyclone was enough to convince an intransigent manager to shut down his computers, much to the chagrin of Tony Moloney, who did IT support for Mt. Newman Mining at Port Hedland in far North Qld.

Moloney, from Clarkson in Western Australia, recalls that Port Hedland staff had an established cyclone drill: "The standard procedure up North is a Blue Alert when there is a possibility of a cyclone forming, a Yellow Alert if it is going to hit within the next 12 hours and a Red Alert when it is right on us. At the Yellow Alert the procedure is to shut down all equipment (including computers), make the place safe and go home. At the Red Alert, no-one is allowed out.

"Anyway, we had a bunch of new managers who had never experienced a cyclone, so when the Yellow Alert came on I sent out a message that the computer system was to be shut down immediately. I got called into the manager's office and was told, in no uncertain terms, that he would not shut down the computers until his manager said so. In fact, I was told to leave the system up, so that we could have communications back to Melbourne. Not being one to argue with managers, I complied, made my personal area secure and went home."

Next day, after the cyclone had passed, Moloney went to inspect the computer room. Rain had leaked through the roof (as it tends to do in cyclones), landed on the live PCs and generated its own electrical firestorm, which had completely destroyed the hardware.

The following year, when the cyclone season arrived, a general memo went out to all staff from management — telling all computer users to follow Moloney's directions as soon as a Yellow Alert was called.

"You just want me to lob it over? Are you sure this is how a PCMCIA card is installed, Sarge?"

UNUSUAL COMBINATION

Reader Troy Sullivan, from Merewether, NSW, worked in tech support at a small retail computer store. He recalls taking an interesting tech support call

EndUser

from The readers of *APC*

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.

"Looks like nothing but clear skies and good times ahead for the Port Hedland area..."

Have you hugged your computer today? Go on, enjoy yourself! What's the worst that could happen?

from a lady who advised that her monitor screen picture had rotated 90 degrees.

Puzzled, Sullivan asked her what she'd been doing when this occurred. "She went on to let me know it had occurred when she was dusting above the computer and accidentally leaned her chest onto the keyboard. Not knowing how to respond to that one, I advised I would check the manuals for the key combination.

"She then told me that she had been trying to re-press the key combination by, and I quote, 'picking up the keyboard and pressing it against my breasts.' I had to put her on hold — to hold back the laughter and, of course, let the rest of the office know. I don't know why anyone would admit that, but it sure made my day!"

REVENGE IS SWEET

Reader Joe Seychell, from Clontarf, NSW, got a call from an accountant who had just purchased his first computer and wanted it set up. The accountant insisted that Joe "pre-quote" the time it would take. "He was a little arrogant and aloof, but a customer is a customer," says Joe, who went to the accountant's office and spent a short time unpacking and installing his hardware and software.

"I then spent more time showing him how all his new equipment worked — from the scanner to his mouse! I even had to show him how to use his accounting package. I spent four long hours on a job that I expected to last for an hour, and was paid in cash for only an hour as I left his home/office (as I had quoted only one hour — he would not pay a cent more)."

About three months later, Joe got a phone call at 2:00am from a very irate and upset accountant who said nothing worked and that it was Joe's fault. "He needed to get it working, right now," Joe says. "I tried to run through a checklist with him but he was not interested. It was my fault and I had to get there now. I explained to him I could go over first thing in the morning, because if I did a service call now it would be triple my regular hourly rate, at a minimum of four hours. He agreed. I arrived at 2:50am to find the power point was turned on, but each switch on his `flashy' power board was turned off. So, I turned them all on. He paid his bill in cash at 3:05am. I went home and back to bed." ATC

WINNERS!

This month's published readers win a Microsoft Wireless Laser Mouse 6000 worth $129.95. Made for desktop PCs, it features Microsoft's high-definition laser technology with ultimate precision and smoother tracking and responsiveness (even on unique surfaces). This mouse includes a new magnifier tool and a tilt wheel, making navigating, viewing and editing easier. The Microsoft Wireless Laser Mouse 6000 delivers comfort and superior control to the desktop in a high-end style that will turn heads.

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Watchdog
eyes on vendors

Too hot to handle

Last August, Watchdog investigated a case involving a damaged Panasonic FireWire-compatible digital camcorder. That time around, the company repaired the device — but once again, this heated issue has reared its ugly head...

We recently purchased two Panasonic digital video cameras (NV-GS35) for school use. We paid for the additional warranty (due to them being used in a school with 800+ students and 40+ staff). After using the cameras for a while and transferring video over FireWire successfully to PCs for editing, we too discovered the same error as discussed in your article (*APC* August 2006, page 30). I called Panasonic customer support and was advised to send the cameras to their repair technician.

After having the camera in for repairs, I was advised it was the same problem [damage resulting from "hot plugging" the device] and would not be repaired under warranty. The very next month your article appeared and spurred me to call again to see if we could get a similar result with one of our video cameras.

After several calls and discussions with regards to your published article and the "Australian Standards for FireWire", I received the attached letter from Panasonic. Your assistance in this matter is appreciated. The cameras are still under warranty.

Mark Barnes
Narangba, Qld

The letter from Panasonic which Mark referred to stated that the earlier instance of damage reported in APC *was "a most unusual case with some mitigating issues... it was decided to take a course of action that was clearly in contrast to our company policies and procedures... FireWire is a `hot pluggable' technology in its strictest interpretation... [Hot plugging] is a well-known and documented limitation of the FireWire technology and its application... [Panasonic] includes a CAUTION sheet [regarding this] for the benefit of all its customers." Watchdog contacted Panasonic and invited the company to re-investigate Mark's complaint. The company replied with the following:*

Dear Watchdog,
Thank you for your letter regarding Mr Barnes and his NV-GS35 Panasonic digital video camera. Panasonic has communicated to Mr Barnes regarding his request for repair under warranty. As per the letter from Panasonic that Mr Barnes has supplied to you, we investigated his complaint when he contacted Panasonic's customer service department regarding this issue and advised him that we were unable to assist in this regard. We regret that Mr Barnes is dissatisfied with this outcome; however, Panasonic's letter to Mr Barnes addressed his comments and explained the reasons why the repair of the camera was outside the company's terms of reference as a warranty claim.

Glenn Callow
Customer Service Manager
Panasonic Australia

But did this really answer the question? The FireWire standard is generally considered to support the practice of hot plugging. With this in mind, Watchdog again contacted Panasonic and asked them, the included cautionary notice notwithstanding, how can the company claim compatibility with the FireWire standard and simultaneously advise users not to take advantage of the features of that technology (namely, hot swapping)? Further, what separated Mark's case from our earlier reader (who ended up getting the free repair)?

Dear Watchdog,
The Panasonic NV-GS35 digital video camera complies with the IEEE1394 standard for quick data transfer with other IEEE1394 devices. Because of the variations between different computer models, a cautionary sheet is packaged with the Panasonic NV-GS35 to advise consumers of potential connection issues. This describes the correct method of connection and we advise our customers to switch off their computer to minimise potential risk of damage. Please also note there are a wide range of circumstances for Panasonic to consider when contacted by our customers for assistance. Each situation is unique and it would be unfair to make direct comparisons between any two instances. Additionally, Panasonic treats each customer query with complete confidentiality and it would be inappropriate to provide further detail.

Glenn Callow
Customer Service Manager
Panasonic Australia

According to APC*'s Technical Editor, Nick Race, the specification itself does demand that devices can be hot swapped, although the net contains numerous accounts of problems resulting from this practice. According to Wikipedia, "Although FireWire devices can be hot-plugged without powering down equipment, there have been a few reports of cameras being damaged if the pins of the FireWire port are accidentally shorted while swapping... Because any hot-pluggable computer device has a risk of short-circuiting, a user may wish to power off both the camcorder and computer before connecting a FireWire cable. Commercial-grade equipment is less sensitive to being hot-plugged, although care should still be taken with any electronic device." Nick concludes that the hazard reported here is not a singular issue — and the potential for damage seems to be a problem more with the FireWire connector (part of the standard) than individual products or implementations. As such, we can presume Pansonic is following the specification, and they've done the right thing by warning people not to hot plug. Watchdog's take: power down, people — it's not worth the risk.*

WHAT'S IN THE BOX?

Jacques Franken of Newcastle, NSW, bought a PC from Retravision for his wife's video-editing hobby. Soon afterwards, he installed some more memory – only to find the PC couldn't recognise it.

"I contacted the support team at Optima (the supplier of the PC) and was told the PC would only support specific memory brands. This has left a very bitter taste in my mouth, due to the fact that the PC has now been rendered useless for its intended purpose (seeing as it's only got 256MB of memory). I am also sitting with a brand-new 512MB module that I cannot return due to it not being 'defective'."

Watchdog invited Optima to respond to Jacques' complaints about his PC. An Optima spokesperson told us: "It is true that Optima can't guarantee that all [third party] components made from every manufacturer will work with all of our products. In fact, many peripheral devices have issues with certain chipsets or conflicts with other devices that prevent them from working as intended. Purchasing components from a system builder such as Optima will give an end user peace of mind that the component they are purchasing has been tested and approved for use on their system. This is one of the benefits of purchasing qualified components – but it doesn't imply that all components that aren't qualified will not function correctly."

In the end, Jacques sold off the PC, stating "I would rather build a PC using components that I personally selected (and know what is in the box). The only reason why we ended up buying an Optima PC was due to the fact that we could get financed on the purchase. This was a bit of an (expensive) learning curve for me, but after running into brick walls so many times, I have come to the conclusion that I will never buy one of those branded PCs again. It's not worth it at the end of the day."

COMMUNICATION BREAKDOWN

After reading the horror stories presented by your readers, I would like to share my latest experience as a "valued BigPond customer". I requested to be connected to the 8,000/384k connection on a three months free offer online. A few days later, I called up to see how my order was going. A rather unhelpful rep cancelled the order without asking me and said she was sorry to inform me I couldn't get ADSL2 (even though I applied for ADSL1!). She said I would have to re-submit my order online for a 1,500k plan, as 8,000k was only available to ADSL2-enabled exchanges. There was no reasoning with her. I was eventually advised (on another call) that it would take four to six weeks for the paperwork. After my third order call, I discovered I had no line sync, and was told on my fourth that I had no "speed codes" on my line — and again my connection was cancelled. Several gaffes later, I'm still without broadband, and at this stage I am wondering whether I really need a BigPond connection. As a previous Telstra dealer who only resigned less then six months ago (and who used to sign up customers for Telstra), I am disgusted to discover this is how they treat their customers. It amazes me that their obviously under-trained staff can get away with such a botched job. At this point I don't see my getting a working connection for several weeks to come.

Paul Wright
Portland, Vic

> AS A PREVIOUS TELSTRA DEALER, I AM DISGUSTED TO DISCOVER THAT THIS IS HOW THEY TREAT THEIR CUSTOMERS

Watchdog contacted BigPond about Paul's comedy of errors. The reply:

Dear Watchdog,

Unfortunately, Mr Wright's experience fell well short of that which we seek to provide to all our customers. We have been in contact with him to apologise for the inconvenience caused and have escalated his application to ensure no further issues. We have also identified the need for some further staff coaching. Despite this unfortunate instance, I would like to point out this is an exception to the generally excellent service our front-of-house staff provide. In fact, for the past year, back-to-back independent benchmarking studies have rated BigPond no. 1 for telephone and email support in the ISP sector. However, as this case shows, we can always learn from our mistakes.

Craig Middleton
Corporate Affairs Manager
BigPond

Some days it's your ISP that lets you down — others days it's your tie.

watchdog@acpmagazines.com.au

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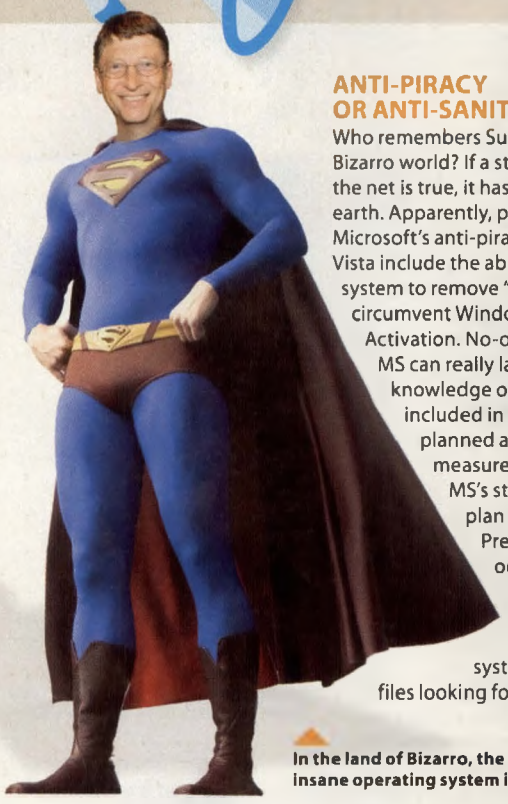

In the land of Bizarro, the most insane operating system is king...

ANTI-PIRACY OR ANTI-SANITY?

Who remembers Superman and Bizarro world? If a story I read on the net is true, it has arrived on earth. Apparently, part of Microsoft's anti-piracy plans for Vista include the ability to patch a system to remove "hacks" that circumvent Windows Product Activation. No-one other than MS can really lay claim to knowledge of any "features" included in Vista or any planned anti-piracy measures, but, given MS's stated goals, this plan seems credible. Presumably it will occur via updates downloaded, which, upon arrival on a system, scan system files looking for the various "hacks" and replace them with backup legitimate system files or, worse yet, disable features of Vista until the system becomes unusable.

This is the Bizarro bit — won't the pirates, some of whom must be software engineers, be able to learn all of Vista's secrets from monitoring how this anti-piracy "feature" works? Worse than this (as the result at this point is merely loss of revenue to Microsoft), won't this instruct the virus writers and identity thieves in the art of circumventing Vista's system file protection — effectively presenting them with a means of totally compromising what Microsoft claims to be the most secure Windows to date?

I can see no joy for anyone in this "war on anti-piracy" if these methods are employed by Microsoft. Embark down this course and Vista will become more of a security nightmare than any previous version.

Ross McLeod
Caloundra, Qld

LIPSTICK ON A PIG?

I've been holding out for the promise of Vista ever since the rumours started back in 2001. Every year, with every new rumour, I got more excited that, perhaps at last, Microsoft would release a cutting-edge OS that pushes the boundaries of hardware and software to new heights.

Now, five years later, it's finally here. But instead of the Promised Land, they've given us Vegas with half the lights turned off. So, what are we loyal Windows users to make of this latest version? At first glance, not much, let me tell you.

For all its glim and glam (courtesy of Aero), Vista's new interface is little more than lipstick on a pig. UI inconsistencies abound, and while the core OS might be boasting brand-new (and admittedly powerful) features, hardly any thought seems to have gone into making the most of the user experience.

From toolbar backgrounds that can't be customised (so when you

letter of the month

LICENCE TO CONFUSE

I've noticed some serious confusion among the IT crowd regarding the retail conditions for Microsoft's Windows XP OEM software packages. It's difficult to purchase XP OEM because retailers claim XP OEM can only be sold with a hardware component, namely a motherboard.

New changes to the OEM System Builder License were introduced in September 2005. More than a year later, they're practically unheard of.

According to the OEM System Builder License printed on current XP OEM packages, (*http://oem.microsoft.com/downloads/Public/sblicense/English_SB_License.pdf*), the software can only be distributed with a "fully assembled computer system", consisting of at least a CPU, motherboard, hard drive, power supply and a case. Even this isn't the complete licensing terms. Microsoft has "simplified" these terms on various web sites, along with graphics showing how to implement these rules (*http://oem.microsoft.com/downloads/licensing/newLicense.swf*). The new rules state: If the pack is opened, the enclosed individual software licence(s) must be distributed with a fully assembled computer system and must be pre-installed.

The individual software licence(s) inside the pack can no longer be distributed with a non-peripheral computer hardware component. With the new 1-pack, the unopened package can be distributed to another system builder by itself, without any hardware requirement.

Ironically, these "simplified" changes aren't simple to find. I contacted Microsoft by phone to clarify whether these changes were current and whether they applied worldwide. The MS representative replied affirmatively on both counts. To add further confusion, Eric Ligman, Microsoft's Senior Manager of Small Business Community Engagement stated in a blog (*http://blogs.msdn.com/mssmallbiz/archive/2005/09/07/461950.aspx*) on release of the new rules: "It is now very simple and straightforward: an OEM license must be sold 'only with a fully assembled computer system.' Loophole closed." What's the whole truth, your Honour?

Why were the "new" rules so secretive and why is it so hard to find the OEM System Builder License in its entirety? I was informed by Microsoft that the Vista rules are not yet finalised, however *APC* Magazine has been advised that the Vista "OEM" rules will be much the same as the XP OEM rules (*http://apcmag.com/node/4347*), as stated on the OEM System Builder License printed on XP OEM packages. Could we be forgiven for thinking that Microsoft is deliberately muddying the water?

Carl Wilson
Hervey Bay, Qld

Carl wins this issue's Letter of the Month prize, a Logitech MX3000 cordless laser mouse and keyboard set valued at $179.95.

Miss Piggy: Guy from NSW reckons Vista's beauty is only skin deep.

change the Aero colours the toolbars don't match), to toolbar icons that are different from one application to the next, Vista seems to be an OS designed not only by committee, but by committee without any sense of cohesion.

Reading some of the comments from Microsoft's shell team (*http://shellrevealed.com*) it seems there are valid reasons for this — valid to Microsoft at least.

"Compatibility" is an excuse often touted as a reason for leaving old features in Vista (open the "Add Font" dialog and you're greeted with the same interface first seen in Windows 3.1!). "By design" is another (for some reason the context-sensitive but unlabelled colour changes in Windows Explorer are there for a reason). "Too small" is yet another (if a UI inconsistency is deemed too small, it's left alone).

What this adds up to is a product that, on closer inspection, is clearly not ready. Some people might think these comments are tantamount to "nitpicking", but take a look around at some of today's most successful IT products and they all have one thing in common — great design, simple design, consistent design.

iPod, flat screens, Vaio, Bang & Olufsen: none of these are necessarily best-of-breed, but they look the part.

There's still time before the consumer launch of Vista, and with any luck Microsoft knows that consumers care more for looks than companies might (and are doing something about the clear and present problems in Vista). If not, there'll be many disappointed people come January 30. I'm already one of them.

Guy Lerner
Turramurra, NSW

FREE SAMPLES

In reference to Allen Biggins' comment, "You little ripper (not)" (*APC* December 2006, page 33), at what price do you pay for music? How much would every one of your million LPs cost if you were to buy them as CDs? Or even on iTunes? *APC* puts programs on the DVD for a taste. Can people remember when you used to get floppy disks with shareware on them that would only let you use the view function until you paid your money (obviously before cracks)? *APC* does not produce a great magazine to flog-off software to those who "choose" to pay for it and read it. Compared to many other PC mags the programs are really quite good. Perhaps we should go back to putting your money under your mattress — who knows... maybe the banks are only using us for our money?

Regan Ware
Underdale, SA

GAUGING THE SITUATION

I was wondering if you folks are ever going to review a "fuel gauge" like on motor cars, but for ADSL — most of us on ADSL are permitted only 200MB, 600MB, 1GB or whatever, and it would be very handy if we could connect the ADSL up to the fuel gauge, then, after it, a four-port router could be connected etc. But the bottom line is, we could monitor total usage and monitor the usage for each computer. We could program in the monthly permitted amount then see it trickle down, until it reaches the bottom (that way we wouldn't run into "extra" charges).

Bob Barnes
Chester Hill, NSW

CRT 4 EVA!

Recently I've been interested in buying a new monitor, and I was surprised to see that CRT monitors are almost extinct. I question people's reasoning for buying an LCD monitor in the first place. LCDs are thinner and put less strain on your eyes, but unless your desk space is seriously limited (or you're going to be on it all day), you may still want to consider a CRT. Not only are CRTs a lot cheaper, they aren't prone to dead pixels like LCDs, and they look good on all resolutions, while LCDs appear slightly blurry outside of their native resolution. Unless you get an LCD with a good refresh rate, you may notice blurring in fast-moving scenes on games and movies, and if you do get a good response time it usually has to forfeit some colour quality to do so. So, unless you really need an LCD, shop around and see if a CRT will do it for you. New OLED screens are going to hit the market soon anyway, so investing in an LCD isn't really worthwhile — as OLED screens will be cheaper and have better image quality.

William Isdale
Brisbane, Qld

epinions@acpmagazines.com.au

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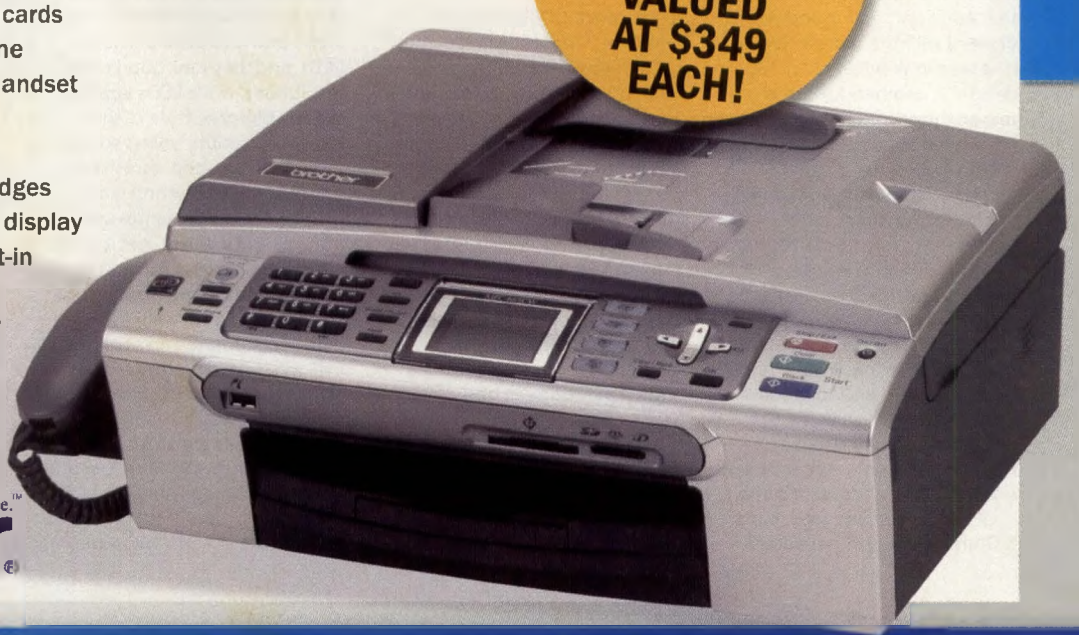

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There are 14 award categories, covering key areas of internet development, infrastructure and applications.

Nominees for each category are picked by *APC* readers, shortlisted by *APC* and judged by independent industry experts.

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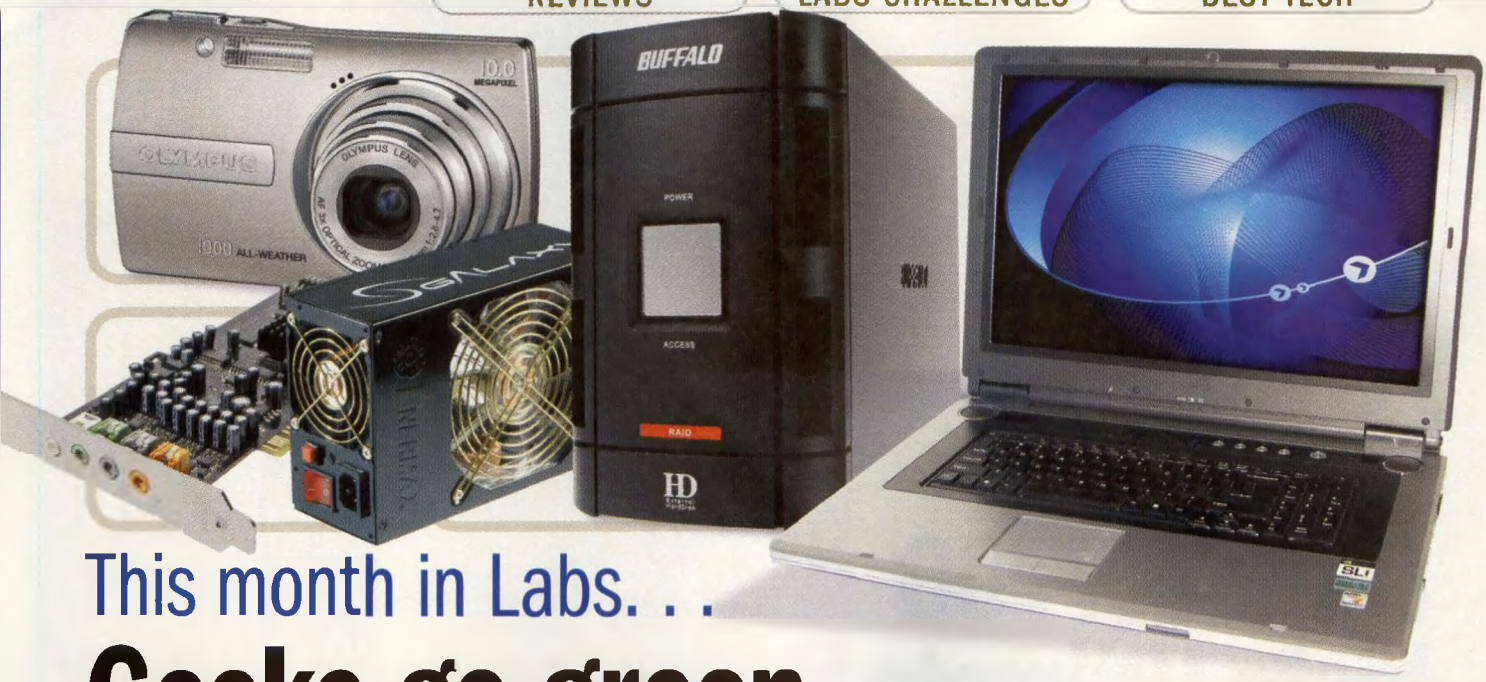


This month in Labs. . .

Geeks go green

We've just spent the last few weeks packing boxes. Yes, there's loads of product to send back to vendors, but this time we're moving offices. Now, this ordinarily might not be newsworthy, or even interesting — but it's been a great insight into technology from an archaeological perspective.

We've thrown out or recycled enough "next big things" and "world-changing products" to choke a whale, and it's brought the industry on which we comment into a new light. Ancient PCs from Digital Electronic Corporation were nestled comfortably in the bin next to groundbreaking proprietary wireless networks from companies long out of business. There's ultra-expensive and never-turned-on equipment used for testing modems (purportedly upgraded to support v.92), wild-looking game controllers designed to emulate the thrill and excitement of riding a motorbike and dusty little robots that carry trays of drinks from the fridge to your armchair in just 10 minutes. (You still have to get the beers out of the fridge yourself, of course. . .)

If it sounds like a graveyard for forgotten technology, then you're spot on. What it puts into perspective is how much hoopla companies place around their products when they are new, and how little time it takes for its status to change before someone wearily slumps it into a recycle bin.

There's a second consideration here, and something we've thought about carefully as we dispose of all this once cutting-edge tech. The environmental impact of throwing away your PCs is something that's still being measured, but I'll tell you now: it's not good. Considering how many heavy metals like lead and lithium are used in the manufacture of a PC, combined with oodles of plastics and various other nefarious substances, it's fair to say that they aren't the most environmentally friendly products in the world.

So, instead of making it landfill, consider donating it or having it refurbished. If it's really good for nothing, then dispose of it wisely. Dell offers a recycling program — open to anyone for a fee — and occasionally offers Recycle Days where the service is free, provided you drop it off of course. There's information about the program at **www.dell.com.au/recycle**.

I'd like to say thankyou to all of you who took the time to email after last month's issue. It's great to get feedback about the good and the bad in *APC* (and just what you want to see between the covers). Keep 'em coming!

> THE ENVIRONMENTAL IMPACT OF DISCARDING PCS IS BEING MEASURED, BUT I'LL TELL YOU NOW: IT'S NOT GOOD

NICK RACE – TECHNICAL EDITOR

Dell E520 & HP dc7700 Vista Ultimate machines

We compare two PCs ostensibly specced for Vista Ultimate by the big brands.

Now that Vista has landed, the "big boys" of desktop computing are coming out to play. We decided to see what they offered that would run the Ultimate version of Vista, which includes the full list of multimedia, speed enhancements and security solutions from all versions of Vista.

What's surprising is that the hardware spec for Vista Ultimate is deceptively low — in fact you pay through the teeth for an Ultimate licence which is hardly usable if you follow Microsoft's hardware spec. Both Dell and HP have realised this, providing desktops that can cope with the load of a *very* heavy operating system.

Where it gets interesting is that the two companies have taken different paths in choosing Ultimate machines. Vista Ultimate requires two things to enable the majority of the functionality the extra cost buys — a TV tuner to enable proper use of the Media Center section, and a TPM module to properly use the BitLocker drive encryption. The third major part is integration of functionality from Tablet edition — but it's really no use on the desktop.

Dell put together a system that focuses on the multimedia aspects of Vista Ultimate (and in the Home Premium version), while HP has targeted the security that Ultimate offers (as do the Business versions of Vista). The upshot of this is that even though there's a single, do-everything version of Windows, it's not going to do everything unless you have the hardware to support it.

CONTACT	Dell
ONLINE	www.dell.com.au
MARKET	Performance enthusiast
PRICE	$1,999

✔ Ready for multimedia/media centre.

VERDICT ★★★½☆

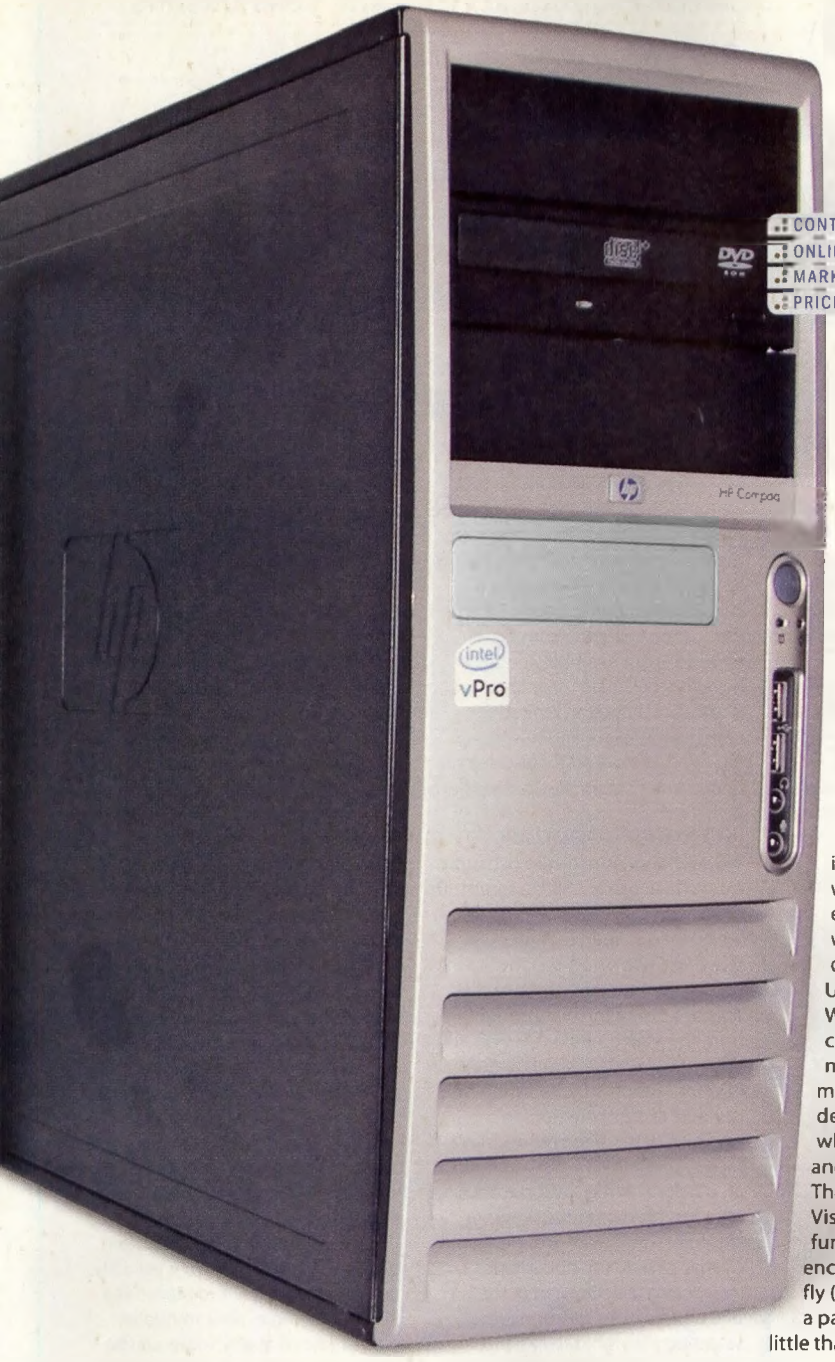
✖ No TPM for BitLocker.

It's unfortunate that neither PC does everything Vista Ultimate can do, but it also highlights something interesting about the Vista Ultimate product. Two of the major drawcards in Ultimate (tuning and Bitlocker) require features more commonly found in separate machines — and promoted in different markets.

IN THE BOX

Dell provided us with a Dimension E520, its self-termed multimedia machine. The model sent in for review consisted of a Core 2 Duo E6300 processor running at 1.86GHz, with 1GB of RAM built on an Intel G965 chipset motherboard. The 965 is the current winning combination of price and performance in the desktop market (and is proving extremely popular among system builders both big and small).

The Dimension E520 was also fitted with a Dell-branded PCI-E Hybrid PAL/DVB-T tuner card. Though it meets the criteria of Vista Ultimate's single TV tuner for the Media Center functionality (watching and recording TV),



CONTACT HP
ONLINE www.hp.com.au
MARKET Performance enthusiast
PRICE $1,795

✔ TPM support; high-end processor.

VERDICT ★★★☆☆

✖ Low-end graphics; no tuner.

choosing a chassis that is typically recommended for small business users. It hasn't slouched in the performance stakes though. The system is built around a Core 2 Duo E6600 CPU running at 2.4GHz, a powerhouse of a chip. It's paired with 1GB of RAM on an Intel Q965 chipset-based motherboard, which also provides graphics using the built-in Intel GMA X3000 solution. The system is populated with an 80GB hard disk drive and a woefully retro CD-RW/DVD-ROM combo drive.

The HP dc7700 is built in a convertible tower case with plenty of room for expansion; say, if you wanted to use the media centre functionality of Ultimate by installing a tuner. What puts it in the Ultimate class is the inclusion of a TPM module — a security device most often seen in business desktops and notebooks, which allows encryption and user identification tools. The TPM module lets you use Vista Ultimate's BitLocker functionality, which can encrypt all your data on the fly (if you aren't logged in)on a particular machine, so there's little that a nefarious user can do to get to your data.

it would be nice if Dell offered a dual tuner, or an option for two tuners to make full use of the media centre software's functionality.

Dell saw fit to include two 250GB hard disks: perfect for time-shifting TV programs for watching down the track. Ultimate also requires the use of a 3D graphics adaptor to provide the Aero desktop. Dell has included a 256MB Radeon X1300 Pro card to enable Aero, as well as providing TV output for the media centre component. Where this system doesn't match up to the ideal Ultimate requirements is with the TPM

VISTA ULTIMATE REQUIRES TWO MAIN THINGS TO ENABLE ITS EXTRA FUNCTIONALITY: A TV TUNER AND A TPM MODULE

support. As the E520 doesn't have an enabled Trusted Platform Module, the point of BitLocker is defeated. True, it can be used with any old USB 2.0 key, but having such a drastic security system using a low-cost, unreliable (and easily lost) key is a scary thought.

HP's tack is to provide a tad more serious machine,

PERFORMANCE

We had to step back in time to benchmark both these machines, as at the time of writing, most PC benchmarks haven't been updated to work with Windows Vista. We ran up Windows XP on both the Dell and HP machines, then benchmarked with PCMark05, for an all-round feel for the machine's performance, and 3DMark06 for a guide on the graphics grunt of the two machines.

Dell's Dimension E520 earned a score of 4,448 in PCMark, a score that's more than adequate to deal with the usage models Microsoft had in mind for Vista Ultimate. This level of performance is fine for video encoding, entry to mid-level gaming and basic video and graphics editing. The Radeon X1300 Pro propelled the Dell to a score of 1,293 in 3DMark06.

The HP dc7700 was the opposite; its high-end processor at 2.4GHz earned the system a PCMark05 score of 3,799, where it was let down by the Intel GMA X3000 graphics which also posted a poor 3DMark06 score of 269. It'll run Aero, but who wants the bare minimum?

Under Vista, both machines ran just fine with day-to-day tasks, video encoding and MCE functions (we fitted a tuner to the HP for fair testing).

HORSES FOR COURSES

What this really highlights to us here at *APC* is that there's no complete solution for Vista Ultimate without doing some research. The dearth of TPM-enabled consumer motherboards restricts proper BitLocker usage, while business-oriented machines won't have the multimedia nous to get the most out of Media Center. The tweakers among us shouldn't have any problems upgrading to a tuner card if Ultimate is where you want to be, but retro-fitting a TPM module isn't feasible. So, when considering a machine that might not be exactly what you need, think about what's possible to do to it — to bring it up to scratch, while the "big boys" sort themselves out.

Nick Race

Photoshop CS3 Beta

Finally — a Universal Binary for the Intel-based Mac and Windows operating environment.

When Thomas and John Knoll began development on the first version of Photoshop in 1987 (which was eventually released in 1990), they could not have possibly foreseen the impact it would have on the photographic and image pre/post production industry. Initially it only ran on Macintosh, with no Windows release until version 2.5. Photoshop brought to the masses a product that enabled the user to quickly, and relatively easily, edit and create highly advanced images that previously could only be managed by professionals. Seven minor and eight full version revisions has led to the impending release of Photoshop Creative Suite 3 (or, version 10).

CONTACT	Adobe
ONLINE	www.adobe.com.au
MARKET	Everyone
PRICE	US$150 (upgrade, approx.)

✔ Non-destructive filters; faster UI.

VERDICT ★★★★☆

✖ Sluggish performance on Intel Macs.

NO 64-BIT, YET

Although having been written from the ground up as a Universal Binary for Intel Macs — and with Vista compatibility for Windows PCs — PS CS3 remains a 32-bit application, which means that at this stage, it will not take advantage of 64-bit.

CS3 still uses an internal available memory address space of 4GB (3GB for a 32-bit app; the OS reserving the remainder). So, unfortunately for some, productivity benefits may not be apparent. Be prepared to sit and watch the slow crawl of file saving.

One of the obvious impacts of 32-bit RAM limitations is that Adobe hasn't been able to implement any more "cache levels" of images (a pre-rendered view of an image at a certain zoom percentage). So, when Photoshop switches from 100% to 66.66%, for example, it doesn't have to recalculate the image. Photoshop has been limited to eight cache levels, and this hasn't changed. History states also see no improvement from previous versions.

PHOTOSHOP'S NEW LOOK

Visual changes are distinctive right away. The icon for CS3 is a small blue block with the letters "Ps"; finally, we no longer need to remember whether Photoshop was the little flower, the butterfly or the feather. This new branding was brought over from the Macromedia takeover. All apps will sport the same treatment, in what's reported to represent the periodic table of elements.

The GUI has been refined: let's face it, keeping palettes arranged in an efficient configuration is a source of constant frustration. Whether sitting in small, user-grouped panes overlapped on the document (restricting user view) or at the top of the page in an all-in-one dock, selecting the right tab can be a nightmare. When the editor and publishers gather around in a semi-circle of doom, you need to — at least appear — as if you're in control.

In CS3, all palettes can be reduced to a block of simple icons, with or without palette name, docked to the right-hand side of the screen outside the image pasteboard. Layers, Info, Brushes etc. are now all accessible within two mouse clicks.

KEY NEW FEATURES

Non-destructive (or "Smart") Filters are arguably the best of the new features — and the single reason why you should upgrade.

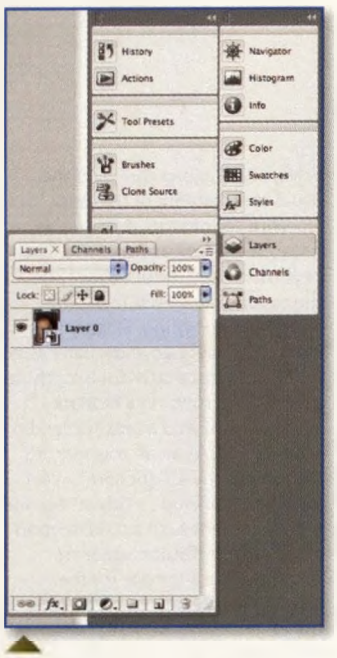
Smart filters are Photoshop special effects filters found in the Filters menu (such as blur, distort, pixelate etc.) that are applied to an image non-destructively. Where filter effects in previous versions were final after the fact, CS3 Smart Filters remain live and re-editable as long as the image is layer-based.

A huge limitation of this grand new functionality is the inability to use the Heal, Brush, Blur, Clone, Stamp, Eraser or gradient tools on any Smart Object layers. Photoshop requires these layers to be rasterised prior to any of the aforementioned tool applications (thus, rendering any further Smart Filter editing void). John Nack at Adobe says this was purely a performance issue.

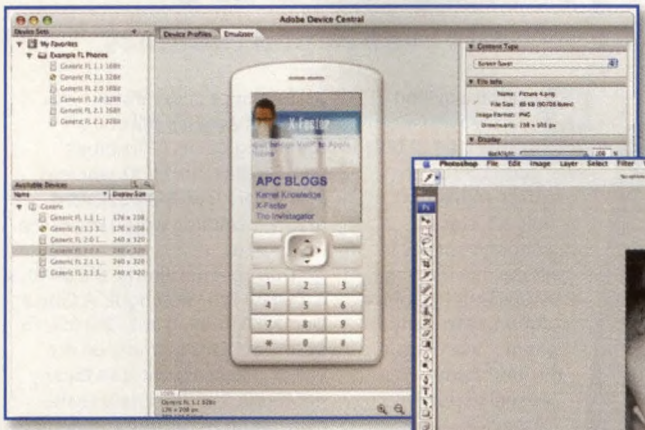
Greater functionality has been given to Vanishing Point. Previously, users were restricted to planes at a 90-degree angle; now, multiple planes, joined at any angle, can be created. Vanishing Point gives the user the ability to wrap artwork

DEVELOPMENT CODENAMES

Version	Platform	Codename
2	Mac OS	Fast Eddy
2.5	Mac OS	Merlin
	Windows	Brimstone
3	Mac OS	Tiger Mountain
4	Mac OS, Windows	Big Electric Cat
5	Mac OS, Windows	Strange Cargo
6	Mac OS, Windows	Venus in Furs
7	Mac OS, OS X, Windows	Liquid Sky
CS (8)	OS X, Windows	Dark Matter
CS2 (9)	OS X, Windows	Space Monkey
CS3 (10)	Universal OS X, Windows	Red Pill



Above, the compact new palettes; left, expanded in all their goodness.



Now you can see how much the glare affects that shiny, new mobile UI.

A simpler and far more iconic look for CS3.

Black-and-white image conversions just got a whole lot better.

pasted from the pasteboard around multiples planes simultaneously.

Dodgy black-and-white conversion is a thing of the past. Auto-conversion analyses the images in a one-click process, tweaking the colour sliders (after this, basic conversion lets the user refine the final product to suit). Clicking and dragging on the image changes all the tones on that range. For example, clicking and dragging a bright blue sky will lighten or darken the blue tones of the image; or, in the image (above right), changing the position of the red slider would see a change from cute baby to not-so-cute-we-should-get-that-baby-to-a-hospital baby.

Adobe Device Central, a newly integrated component, boosts efficiency for developers of mobile and consumer electronic content. Device Central is a new part of Photoshop's core features (a bit like Save for Web) and enables the user to design, preview and test mobile bitmap content.

As well as previewing device profiles — information such as platform, networks available, regions and languages are all inbuilt — for many phones, some of the most intriguing features of this new tool are the designer features. Display attributes, scaling and alignment (plus non-destructive options) allow you to see what your UI could look like in different real-world situations (or differently sized screens). For example, you can preview how your designs would be viewed in an outdoor environment by overlaying an image that simulates reflection and glare.

SURPRISING PERFORMANCE ON INTEL MACS

APC used two machines for testing — both Macs (because of the anticipation around a version of Photoshop optimised for Intel CPUs). We tested with a MacBook Pro (2GHz Core Duo, 1GB RAM, 100GB HDD) and a Dual 2GHz PowerPC G5, 2GB RAM, 150GB HDD.

We used two industry-standard benchtests to clock the performance of CS3. The first, from Retouch artists (**http://retouchartists.com**) has been developed as a series of "real world" benchmark tests specific to Photoshop. The test takes a 3.5MB image, resizing it and changing the colour mode, before performing a series of image manipulations frequently used by both professional and amateur artist alike — hue/saturation, brightness/contrast, levels, shadow/highlight, unsharp mask and finally a Gausian blur.

Standardising PS Performance settings (under preferences) to one history state and four caching levels keeps the playing field somewhat level, meaning it's the processor, RAM and HDD being truly tested.

The second test is an image resize test action (available for download from **http://blogs.zdnet.com/Apple/?p=158**), which takes an image of 10MB or more and scales it — with very little quality loss — to a file size of around 550MB. When all the action ceases, the final image has been scaled to about 540% of its original size.

We were shocked at the results: the Intel-based MacBook Pro was significantly slower than the PowerPC G5, though mainly through the differences in the amount of RAM present in the machines.

The Retouch test took six minutes, 18 seconds for the G5, and crawled in at a less-than-encouraging eight minutes, 21 seconds on the MacBook Pro. The resize test saw the G5 scale the image in 28.4 seconds, while the MacBook Pro again snailed its way across the line in five minutes and five seconds. It's worth noting, though, that our test MacBook Pro only had 1GB RAM (the G5 had 2GB).

Although the heavy lifting isn't yet perfected, the user interface itself seems much snappier, and opening/closing the program is now much more responsive than CS2 running under Rosetta on OS X.

Despite the qualms about speed, Photoshop CS3 has a greatly improved user interface and useful non-destructive filter capability. The developer tools for mobile technologies are a valuable recognition that more people are optimising graphics for devices now — not just for the web.

In terms of cost, when PS ships later this year (Autumn 2007), an upgrade from previous CS versions of Photoshop is expected to cost somewhere in the vicinity of US$150. Note though, that this is a Photoshop-only upgrade. The complete CS upgrade is expected to be somewhere around US$550.

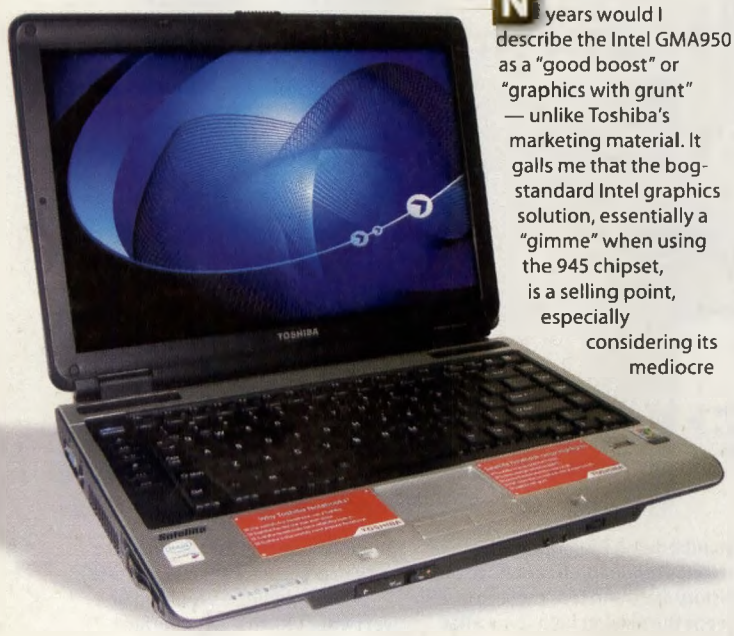
So, the question on everyone's wallets is: should you upgrade? The simple answer is yes — but think about including a RAM upgrade in the price as well.

Troy Coleman

ADOBE DEVICE CENTRAL, A NEW COMPONENT, BOOSTS EFFICIENCY FOR DEVELOPERS OF MOBILE AND CONSUMER ELECTRONIC CONTENT

Toshiba Satellite M110

A decent all-rounder, except for its over-hyped graphics.



Never, in a million years would I describe the Intel GMA950 as a "good boost" or "graphics with grunt" — unlike Toshiba's marketing material. It galls me that the bog-standard Intel graphics solution, essentially a "gimme" when using the 945 chipset, is a selling point, especially considering its mediocre performance under Vista. Unfortunately, it's still one of the selling points of Toshiba's new Satellite, the M110, whereas even a very low-end dedicated graphics solution would knock the pants off it.

Don't get me wrong, the M110 is a beaut little notebook. A Core 2 Duo 2250 running at 1.73GHz with 512MB of DDR2 memory on the 945 chipset is a great start for any notebook, but don't believe the hype about its "grunt[y]" graphics. The M110 is the multimedia form of the M series, with a 15.4in wide-screen panel running at 1,280 x 800. The screen is clear, bright and gorgeous — no complaints there!

The unit holds a double-layer SuperMulti drive, a 60GB hard disk drive, 802.11a/b/g Wi-Fi and the usual complement of USB and FireWire connectors. And — this notebook is a pleasure to use. The keyboard has a decent travel and the touch pad is inset to avoid knocks when typing. Battery life clocks just over two and a half hours.

Performance is OK for a machine at this price, running a PCMark score of 2,682 and a dire 3DMark06 score of 100. As an all-rounder, it's a good model. It's got comfort for long hours of work, a tidy screen for entertainment such as DVDs, good little Harman Kardon speakers for audio and a remote for the terminally lazy. Just don't believe the marketing material as far as the graphics go.

Nick Race

CONTACT	Toshiba
ONLINE	www.isd.toshiba.com.au
MARKET	Everyone
PRICE	$1,699

✔ Great screen; good price.

VERDICT ★★★☆☆

✖ Poor graphics solution; more RAM.

Pioneer DreamBook Power M59

Is this really a laptop?

We've seen notebook sizes grow and shrink over the years — including fold-up and fold-away 20in PCs from Dell and others — but this is a first.

Pioneer's DreamBook Power M59 is a 19in top-of-the-line beast. It's built with an AMD TurionX2 TL-52 processor running at 1.6GHz on an Nvidia nForce 4 chipset with not one, but two GeForce 7900GTX graphics cards in SLI. This puts most desktops to utter shame.

And they haven't stopped there. This model is packed with two 120GB 2.5in hard disk drives in a striped array (RAID 0) and a Pioneer DVD-RW DL drive to back it up. There's a built-in digital terrestrial TV tuner from Avermedia with a remote; we can see this machine replacing TVs and media centre PCs in some lounge rooms.

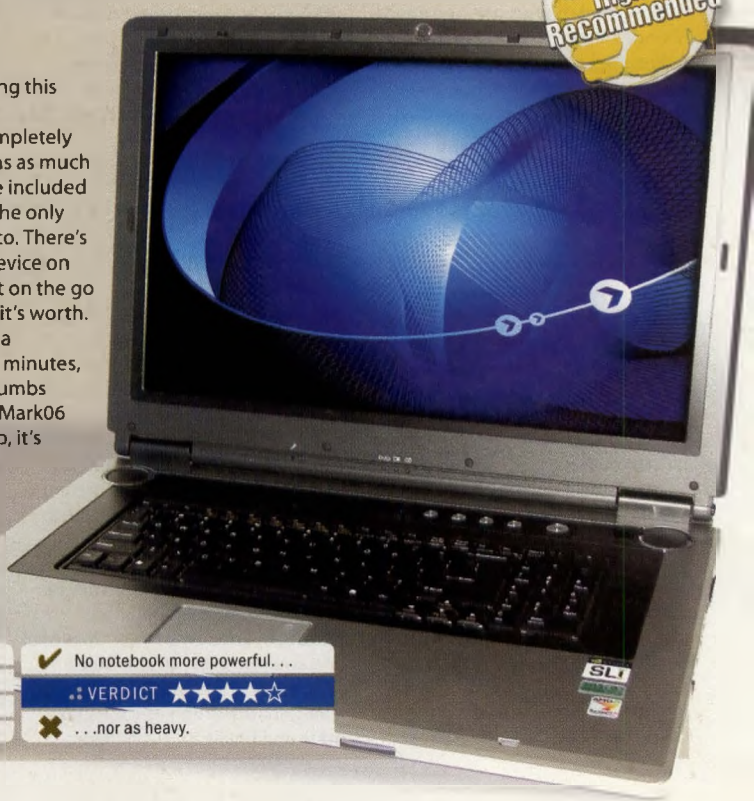
The display on the notebook runs at a devastatingly high (for a notebook) 1,680 x 1,050 native resolution and is crisp and clear, with even lighting over the entire surface. There's wireless from Atheros, Bluetooth 2.0 and a Realtek Gigabit Ethernet port. It's coated in USB and memory card slots and there's pretty much nothing this notebook can't handle.

The problem is: it's completely impractical. It really weighs as much as a small desktop and the included backpack is pretty much the only thing going that it'll fit in to. There's no way you can use this device on your lap, and pulling it out on the go will be more trouble than it's worth.

The M59 gets through a full charge in one hour, 11 minutes, while PCMark gives it a thumbs up with score of 4,262. 3DMark06 showed results of 5,701. So, it's very powerful — though impractical — and your wallet will go into shock.

Nick Race

apc Highly Recommended



CONTACT	Pioneer Computers
ONLINE	pioneercomputers.com.au
MARKET	Performance enthusiast
PRICE	$6,499

✔ No notebook more powerful. . .

VERDICT ★★★★☆

✖ . . .nor as heavy.

Creative X-Fi Xtreme Gamer

Smaller and better value, the X-Fi is relaunched.

So what happens when you become so successful that everyone else just gives up trying? Creative is doing a pretty good job of solving this Gordian problem. Last year's X-Fi topped its own superlative Audigy in terms of onboard processing power. Throwing an expensive, 50-odd million transistor, 400MHz chip onto a consumer-level sound card could have seemed foolhardy at a time when most folks were satisfied with the results they got from integrated options. Instead it proved that there is somewhere higher than the top, and that PC sound could — and deserved to — get better.

Some of the claims you might hear regarding X-Fi are a tad spurious: yes, it shows significantly less CPU utilisation than other sound cards, but the frame-rate advantage this confers to games is nowhere near big enough to make it part of the purchasing decision. Similarly, no amount of "Crystallisation" (Creative's neat sound enhancement function) is going to save a badly encoded MP3 from sounding terrible. A 109dB signal-to-noise ratio and THX certification can't be argued with, even if you're not using the full 7.1 output.

The Xtreme Gamer version shown here shouldn't be confused with the previous Fatal1ty gaming versions of the card — there's no front-panel connector or any onboard RAM for caching sounds. Instead, we have a no frills, fully featured, half-height reworking of the X-Fi Xtreme Music card, and one that works fine with Vista. The reduction in size helps with airflow in small form factor cases, but does leave the mic in and digital out sharing a jack. Most importantly, though, there's a hefty drop in the price. It's strange to see a sound card seeming like good value, but that's what we've got here.

Adam Oxford

apc Highly Recommended

CONTACT	Creative
ONLINE	www.creative.com.au
MARKET	Everyone
PRICE	$289

✔ Sound; 7.1; 109dB SNR; THX.

VERDICT ★★★★☆

✖ Shared mic/optical.

Enermax Galaxy 1KW Power Supply

Need ridiculous levels of power? Here you go.

You've taken the plunge, bought up two ripsnortingly fast Nvidia 8800GTXs, a cache of hard disk drives and an over-the-top CPU — and it just won't start up. It's happened before, and it'll happen again — not enough power. The reality is that, unlike most other forms of technology, modern, high-end PC systems are getting less efficient as far as pure power draw goes.

Sure, major manufacturers will talk about performance per watt and how much better off we are, but power requirements in absolute terms are growing at a disturbing rate. If you'd have told me a few years ago you were buying a 1,000W power supply it would be a laughing matter — now it's par for the course if you want a truly high-end computer.

Enermax has brought its 1KW beast in to the market to fill that niche the only way they can. Competitors have utilitarian models, but Enermax has put the effort in to make your PSU a showpiece in a show-off machine. The Galaxy 1KW model offers a surprisingly sturdy modular cable system, so you only need to plug in the cables you need. It has 13.5cm and 8cm fans to keep it cool, and supports a ridiculous number of hardware components. Out of the box the PSU will support a quad-core processor, quad-SLI and up to 24 hard disk drives.

Efficiency is important at this kind of power level. Enermax list this model as 80% efficient under load, which means less energy lost to heat (and less cooling required for your case overall). Our only complaint about the PSU is that it's huge. Unless you're using a full tower or hefty mid-tower case, it might not fit, so make sure there's plenty of depth in your chassis when speccing up a new machine with one of these inside.

Nick Race

apc Highly Recommended

CONTACT	Actiontec
ONLINE	www.actiontec.com.au
MARKET	Performance enthusiast
PRICE	$499

✔ Efficient; flexible.

VERDICT ★★★★☆

✖ It's huge and expensive.

CONTACT	Sentinel Geo Systems
ONLINE	www.roadangel.com.au
MARKET	Everyone
PRICE	$999

✔ Safety hazard info.

VERDICT ★★☆☆☆

✖ Clumsy interface.

RoadAngel Navigator 7000

Safety device manufacturer moves up to navigation — with mixed results.

We were looking forward to hearing Brocky dictate how to get to the nearest KFC but, unfortunately, it wasn't to be. RoadAngel is still working on putting together the optional-extra Brocky voice pack for the 7000.

RoadAngel made its name in Australian navigation with "safety" devices — gadgets that sit on your dashboard and warn you of "safety" hazards (read ticket-hazards) — school zones and speed/red light cameras.

Now, it has migrated the RoadSense safety database into a full-blown navigator, using the Sensis and UBD maps and Sensis' locations database, which provides 380,000 points of interest (pharmacies, ATMs, cinemas etc). The combination of the three is supposed to provide a more value-packed device, so that even if you're not navigating, you can still be using the safety features (however, updates require a $9.95 monthly subscription).

Unfortunately, the actual execution of these ideas lets the potential of the product down. Unlike the simple touch-menus on longer-established navigators like TomTom and Navman, the menu system on the RoadAngel 7000 is a comparatively unintuitive hodge-podge of different style menus. It's further confused by the fact that many of the icons aren't labelled (it took us about 15 minutes to figure out that the icon for "navigate to" was a picture of a business card.)

The inclusion of a stylus is also self-defeating for a navigator. There's something about manoeuvring a one-tonne hunk of metal, rubber and airbags while trying to precisely hit the right point on a screen with a stylus that doesn't quite sit right. That said, the interface mostly works well with a fingertip, though there are occasional parts of the interface that use standard Windows CE drop-down menus (and which don't fare so well).

THERE'S SOMETHING ABOUT MANOEUVRING A ONE-TONNE HUNK OF METAL – WHILE USING A STYLUS – THAT DOESN'T QUITE SIT RIGHT

There are some redeeming points in favour of the device. For a start, it's smaller in width and height than most navigators (at 95 x 22 x 75mm) and quite light at only 160g, which are good attributes in terms of being able to pocket it comfortably.

It also has a nice feature that allows you to manually scroll around the surrounding map, which allows you to preview the route ahead on the map, or simply check out the lie of the land.

It also has 2D and 3D views for maps, though disappointingly, you have to go into a settings sub-menu to change views, which is inconvenient. Other navigators offer it as an onscreen toggle at all times, letting you switch quickly between the two modes. Additionally, switching between the two modes often ended up showing the wrong part of the map, which was an alarming bug.

In our testing, route calculation was slow, despite RoadAngel's claims of a fast CPU. For example, plotting a route between Sydney and Melbourne took about 15 seconds, whereas on a TomTom 910, the same route only took a few seconds. At one point, it instructed: "at the next possibility, turn left. At the next possibility, turn right," which wasn't encouraging, either.

The RoadAngel also takes a very long time to get a lock on the GPS satellite signals, which means you could be sitting in the driveway for a few minutes unless you remember to turn the navigator on well in advance. TomTom can lock on to the signal faster, because each time you dock the TomTom with your PC, it updates the satellite orbit info in the device.

At this stage, only Australian maps are available — RoadAngel says UK and European maps are "coming soon", so it's not such a good investment if you're planning overseas travel (compared to other brands of navigators).

Certainly, the RoadAngel's feature set with speed zone and traffic camera info has potential, but we'd put our money into a more mature TomTom or Navman device at this stage.

Dan Warne

Buffalo Drivestation Duo

Enjoy a portable half-terabyte with Buffalo's new box.

Hard drives have never been cheaper. A quick look at the offerings show that 250GB or more can be had for as little as $140. Coincidentally, we are beginning to adopt new high-definition video formats that require a great deal more storage than the MPEG-2 standard, so 500GB is genuinely useful and will only become more so as we finally banish poor quality, lossy codecs to history.

Fitting an internal hard disk can be a bit of an inconvenience, generally; finding a spare SATA port, opening up your PC and ensuring there's room in your case is a chore you don't want to endure.

Buffalo isn't the first to market a half-terabyte of portable storage with the Drivestation Duo, but what's on offer is quieter and cheaper than competing products. The box actually contains two 7,200rpm 250GB SATA drives, configured either as independent drives, a RAID 0 stripe or a RAID 1 mirror, with a rear panel offering USB 2.0 and IEEE1394 connectivity in four- and six-pin varieties.

The unit itself won't win any beauty contests. It has a few dim LEDs on the front to indicate power and disk activity, a rear fan, and not much else. Transfer speeds from individual drives were pretty good: our HD Tach benchmark reported a solid 23MB/s over USB (obviously faster when configured as a RAID stripe).

Although the Drivestation is both heavy and ugly, its usefulness outshines all of that. It's a perfect way to increase your storage; it won't break the bank; and it's one less reason to open your PC.

Orestis Bastounis

CONTACT	Uniden
ONLINE	www.uniden.com.au
MARKET	Everyone
PRICE	$599

✔ RAID 0/1; 500GB capacity.

VERDICT ★★★½☆

✖ External power supply.

Olympus Mju-1000

Point and shoot in high resolution.

The megapixel count of a camera used to be nearly the only factor when considering its purchase in the point-and-shoot market. A 3.1MP camera was better than a 2.5MP camera — and everyone could rest easy at night. These days it's a bit of a different story, but this still hasn't stopped Olympus going for the MHz equivalent with its latest digital camera range.

CONTACT	Olympus
ONLINE	www.olympus.com.au
MARKET	Everyone
PRICE	$649

✔ High resolution; quality images.

VERDICT ★★★½☆

✖ Response is a little slow.

The new top-of-the-line from Olympus is the Mju-1000, a 10-megapixel happy snap camera for under $650. Even a year ago, a count higher than 8MP firmly placed a camera in the semi-professional market, but with the increased demand for CCDs, and technological advances in their production, we can see high-quality, high-resolution sensors moving down into the casual market.

The Mju-1000 is a fine example of this new breed of point-and-shoot cameras. It's easy to navigate and use, responds quickly at its "normal" settings (2,560 x 1,920 resolution) and fits comfortably in a pocket or purse. At full resolution, stills at 3,264 x 2,448 take a while to store to card or internal memory, and really chew it up quickly at 4MB a pop. Further to this, without the benefit of flash (and the laxness in exposure it allows), the camera is a little sluggish to focus and the 28MB of internal storage is pretty weak, considering the price of flash memory.

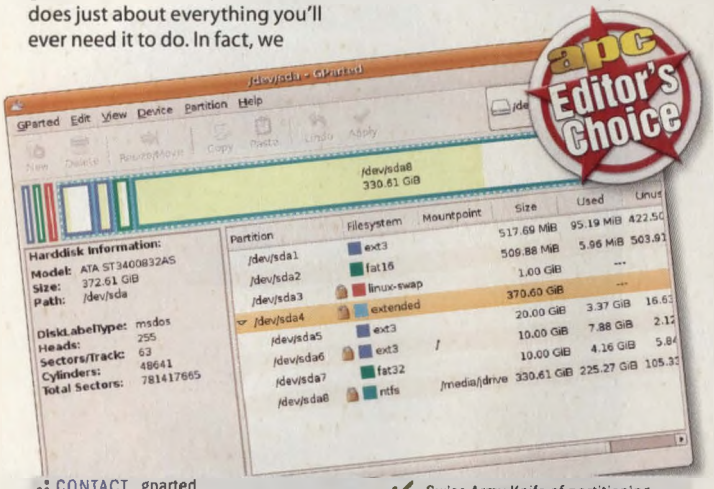
So, while not perfect, the Olympus takes great photos for the family web site — but be prepared to buy up xD cards in bulk if you want to take photos all day.

Nick Race

gparted 0.3.3

The most popular partitioning tool under Linux, now with support for Vista.

This is the de facto partitioning tool under Linux, and with good reason: it's easy to use and does just about everything you'll ever need it to do. In fact, we mentioned gparted last month in the *APC* Vista upgrade guide for help in setting dual-boot systems.



CONTACT gparted
ONLINE gparted.sourceforge.net
MARKET Everyone
PRICE Free

✔ Swiss Army Knife of partitioning.
VERDICT ★★★★½
✖ Not all functions supported.

Despite appearances, the real magic isn't so much gparted itself — for it's actually a front end to the tools that do all the work. In this case "parted", ostensibly short for "partition editor", and various file system tools for FAT, NTFS, Ext3, Reiserfs, Reiser4, XFS and JFS.

And it's here that one of the more interesting recent feature additions appears — as of version 1.13.1.1, the NTFS tools (usually packaged as "ntfsprogs") have been updated with support for Windows Vista, especially in resizing partitions, making it an excellent tool for managing a Vista-based system.

And because it can create, delete, resize, move and even copy entire partitions, and usually with full support to do this with each file system (some functions are limited depending on file system), it's a universal partitioning tool regardless of which operating systems you run. gparted comes in a bootable ISO form that launches a Gentoo-based Fluxbox environment to manipulate and manage the partitions on your system without booting anything on it.

At time of writing, the latest version of gparted LiveCD is 0.7beta and features the new ntfsprogs for Vista support. And, because not everyone can be bothered burning (or carrying) a CD, gparted also comes in bootable USB form — essentially the same LiveCD code with changed scripts to boot from a USB key. Very cool.

Most Linux distributions come with parted and either gparted or qtparted (based, of course, on the QT toolkit); however, they are frequently out of date. To grab the latest version, head to the gparted homepage and download from there.

Ashton Mills

tightvnc 1.3.8

One of the best remote desktop programs for Linux.

VNC (virtual network computing) applications, aka. remote desktop software, are nothing new, and Linux has a variety of programs and protocols to choose from. Even within the realm of applications sporting the VNC banner itself — thanks to the original VNC application developed and open-sourced by AT&T — there are a number of inter-operable choices including the original VNC, RealVNC, xf4vnc, x11vnc, ultraVNC and tightvnc.

Building on the original source code, each aims to excel at remote desktop operation over abundant (as in a LAN) or limited (internet connection) bandwidth. In the case of tightvnc, the latter is the focus.

As the goal is to send desktops with minimal bandwidth, VNC works by breaking down the framebuffer on the server into "rectangles" sent to the viewing client. Initially this involves the whole screen, but thereafter only changed rectangles are sent — the illusion of a smooth remote desktop experience, depending on how active the screen is.

One of the key features of VNC and tightvnc is its cross-platform nature — servers and viewing clients can be run in any mix of Linux, Windows and Java. Bar protocol encodings specific to each version, the various VNC implementations are compatible with each other.

tightvnc excels, as its title suggests, on low-bandwidth links. Usually you can use tightvnc to remotely access your Linux desktop at work from home (or vice versa over a broadband connection) and get good performance. It was initially optimised for dialup links, so broadband gives it even more room to move. Anything but full-screen video can and does run quite smoothly over local networks and the net.

CONTACT tightvnc
ONLINE www.tightvnc.com
MARKET Everyone
PRICE Free

This latest release of tightvnc includes a number of new features, including multi-monitor support for Win32 servers (X has always been able to do this by default).

root's X desktop (Agamemnon:1)
apc
Philips to blow gamers, literally
50 CATEGORIES OF THE BEST TECH GEAR
Introducing Live Search.
Cisco sues Apple over iPhone name

✔ Effective VNC for all bandwidths.
VERDICT ★★★½☆
✖ Still need to use 16-bit colour.

While there are better commercial alternatives available such as NX, tightvnc does the job and does it well. Most distributions should also have it available in their package catalogues, but, failing that, head to the home page for the latest download.

Ashton Mills

MSI recommends Windows Vista™ Home Premium

MSI
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Crystal Collection

intel Centrino Duo
Core 2 Duo inside

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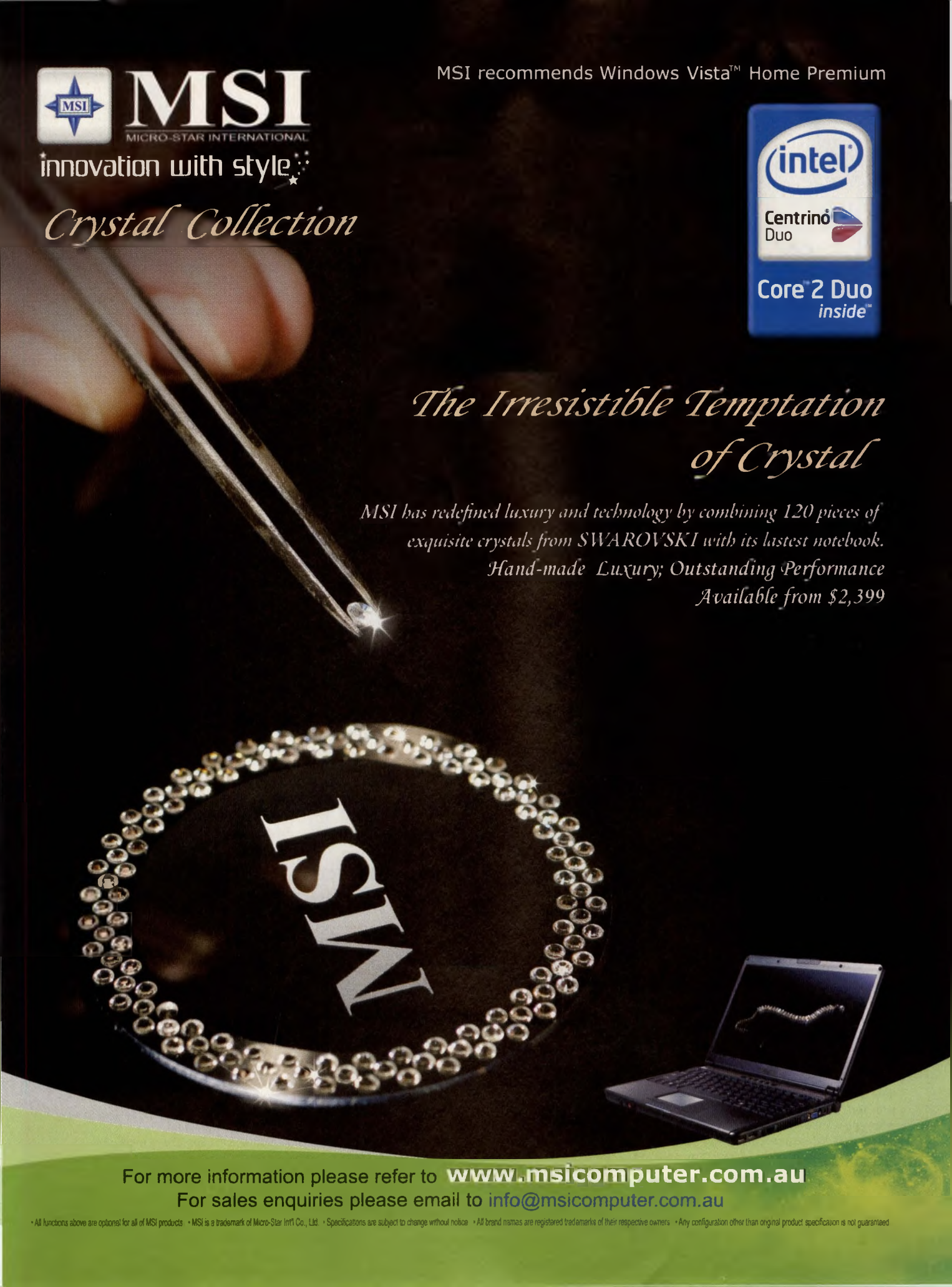

For more information please refer to **www.msicomputer.com.au**
For sales enquiries please email to info@msicomputer.com.au

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FIRST TEST

apc Editor's Choice

Office 2007 reviewed

You've tried the beta but will you want to switch to Office 2007 now it's here? *Mary Branscombe* and *Simon Bisson* look beyond the ribbon.

Every time Microsoft releases a new version of Office, many don't see the need to upgrade because previous versions have always been powerful enough. The 2007 Office system is disruptive: a new interface challenges the way experienced users work; a new file format could take years to become common; and there's an increasing emphasis on integration with servers and services for workflow, content management and security for larger businesses. Now's the time to stop thinking about how you do things with your software and start thinking about what you want to do. We take a close look at the different versions to reveal the surprise bargain, warn you of the unnecessary extras and answer your upgrade questions.

Who said Microsoft was afraid of change? The two most disruptive things you can do to a successful software package are change the file format and change the interface. Office 2007 does both; plus it adds even more new applications to the ever-growing list of the Office system — some essential, some with rather less appeal.

Ignore all the posturing about open standards and open source; the new XML file formats in Office 2007 are a good idea, because they save space and give you more chance of recovering data from a corrupted file. They're ZIP files, out of which you can extract individual items like images. Businesses can index and tag files or extract information from them directly, without opening them in an application. You know immediately from the extension whether a file has macros lurking in it, which could save you getting infected. From a practical point of view it's good news all round. Because converters are available for older versions of Office, you can try to persuade friends and colleagues to let you send them new format files. But as many businesses will wait months or even years to upgrade to Office 2007; they won't become common any time soon.

THE RIBBON INTERFACE

The core Office apps don't have menus or toolbars any more; just a context-sensitive ribbon of tools. Expect to see more ribbon

Not all the applications get the ribbon, leaving menus and toolbars looking cluttered and old-fashioned.

interfaces from Microsoft — and from other software developers, because Microsoft has announced the way other companies can license the interface. That means we'll see a rash of products that don't benefit from the ribbon interface and some that take good advantage of it to simplify and organise function, although none of them will be in direct competition with the Office apps. That makes this more than an experiment.

Whether you call it user interface or user experience, everyone has an opinion and it's hard to get right.

For the apps in Office 2007 that have the ribbon, we would say Microsoft has succeeded. Features that have been in various Office applications for years have been put where you can find them and use them. Even Bill Gates has found features in Excel he had never noticed before — and congratulated the team on what he thought was something new.

Yes, you'll need to learn where everything is again. And no, not everything is obvious at first glance, mainly because features don't appear until you're in a position to use them, so the Outline tools aren't visible until you switch to Outline view. It's a good test of how many features you actually use in a program to time how long it takes you to get your first context tab. Power users who complain features are missing need to use the program to do something rather than just rummage through the basic ribbon tabs; you switch from thinking about how you do things to thinking about what you want to do, which can feel like giving up control — but makes you more productive in the end. And while the menus are gone for good and there's no classic view, you can still use old keyboard shortcuts.

The Quick Access Toolbar at the top of application windows is a fair compromise, using space in the title bar that's usually wasted to remind you which application you're using — in case you had somehow forgotten. We still want the mini-toolbar that fades in whenever you highlight text to be customisable; if it has the mix of tools you need it's incredibly handy, but if it's missing just one of the formatting tools you use the most, it's more irritating than useful. And it's disappointing that dialog boxes and the occasional task bar have barely changed from the 2003 equivalents, even though you'll use them far less and they're far easier to find.

THE RIBBON SWITCHES YOU FROM THINKING ABOUT HOW YOU DO THINGS TO WHAT YOU WANT TO DO

OUTLOOK FEATURES

Outlook only has the new interface for individual messages and calendar items — not the overall application. Look at your Inbox or Contacts folder and you'll see the same old clutter of menus and toolbars; open a contact or write an email and you get the ribbon organisation of Word. Diehard text fans will miss the option not to use Word as their email editor, but it no longer slows things down, and spell-checking as you go is as useful in email as it is in any other document. We would like to see Microsoft bite the bullet and reorganise the tangle of dialog boxes in Outlook, although automatic account setup means one less thing to search for in the configuration options.

One place the new interface doesn't work as well is with add-ons; these are more popular for Outlook than the other Office programs and they're usually toolbars and context menus. Outlook 2007 relegates them to an add-in tab on the ribbon (unless they're specifically written to work with the ribbon), so they can be harder to

work with. Add-in management is also moved from the Options menu.

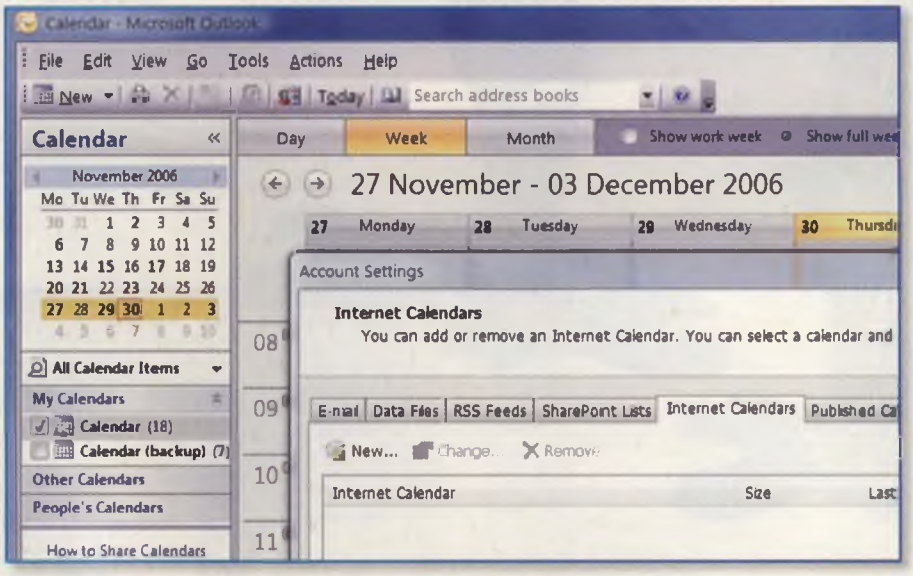
There are small changes in Outlook that make a big difference, like being able to set the timezone for a meeting — and yes, you can have the start of a flight in one timezone and arrival time in another. Searching is vastly improved; on a par with the free LookOut add-in but integrated into the program very neatly. Let the indexer run overnight when you first install Outlook and you can retrieve email by typing a few letters into the search box at the top of the window, or from the Start menu in Vista.

Outlook organises more than your mail. The colour scheme of Office can feel relentlessly cheerful, but the bright colours work well for colour-coded categories, which replace the unmemorable coloured flags of 2003 and update the seldom-used category feature. The flags are now reminders: right-click and you can remind yourself to deal with a message. You can still choose a specific hour and minute but we prefer the today, tomorrow, this week and next week options that mirror the way people think about work.

SCREEN SPACE

The new look of Office takes up more room than just having a menu bar, although not more than having a few toolbars up. If you sacrifice a little space in your Inbox for the To-Do Bar, you'll see your next few appointments — including things you've been invited to and haven't yet seen in your email — and the tasks you've flagged. This is the time and task management most PIMs promise, delivered effectively and simply; where Microsoft gets it right, that's the real advantage of Office 2007. Annoyingly, you can't sort the tasks so that "Today" is at the top — either "This Week" or tasks that aren't tagged with a specific date get in the way.

Word doesn't only use the ribbon to make sense of existing tools; galleries organise new effects, from document building blocks to themes to SmartArt. Building blocks include pre-built objects like pull quotes and your own selections, so you can save your address and signature and drop them into a document rather than starting from a fixed template. Themes combine font, layout and colour styles so you can quickly get the same look and feel in different documents. Paragraph styles are simplified, although there's still room for improvements. SmartArt doesn't only power the range of diagrams the ribbon button offers; you also get a range of effects on shapes and



There are small changes in Outlook 2007 that make a big difference; for instance, it simplifies subscribing to internet calendars, including Google's service.

FACT FILE

Sending appointments from Outlook doesn't need an Exchange server any more; invitations use the open standard iCal format so they work with Google Calendar, Lotus Notes and a wide range of calendaring tools. You can also send a snapshot of your diary, which looks like an image but can be dragged and dropped into other programs because it's also iCal.

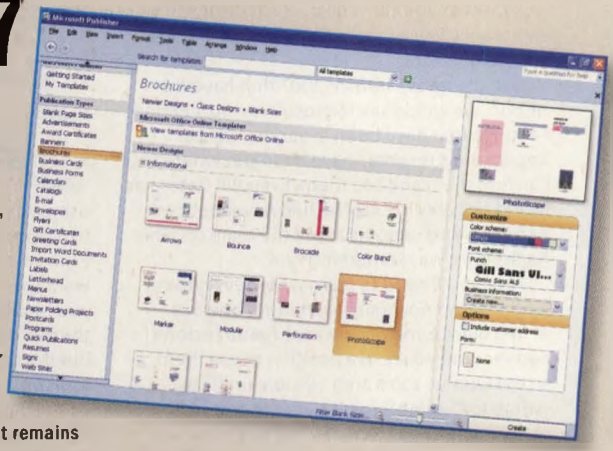
DTP AND DESIGN

Office Publisher 2007

SUPPLIER Microsoft
PRICE $299
VERDICT ★★★½☆

Publisher doesn't get the ribbon interface and the many design tools look cluttered and confusing next to Word or PowerPoint. The step-by-step task panes are clearer and it opens with a new template dialog with professional-looking designs. As you choose different colour and font schemes all the templates change, which is a very quick way of getting started. If you're designing from scratch there's a good range of paper sizes — including vertical elements for web sites — and it's easy to create a custom paper size here.

Publisher 2007 puts extraneous design elements on the Extra Content pane when you switch templates — get matching brochures and business cards by changing templates and saving a copy, or save elements in the Content Library. The design tools are largely the same, but there's a Pantone tab on the Colours dialog. Mail merge adds custom URLs to print documents or emails, and you can pull names from Access, Excel or Outlook then track the responses in Business Contact Manager. Publisher is trying to be a real business application; it remains a competent DTP package.



charts including reflections and translucency that look like you've had a graphic designer helping you out.

VISUAL INFORMATION

Excel gets the same art effects for charts and graphics; PowerPoint gets those same powerful charts and can even use SmartArt for bullet points. Themes simplify getting the same look across a presentation without resorting to master slides, but, if you do, there's now a hierarchy of masters with templates for picture slides, chart slides and other layouts. This is the simplest approach PowerPoint has ever tried for using and customising templates.

Excel does the obvious catching up: bigger worksheets, 64 levels of sort, 2GB of memory, unlimited cells in formulas, unlimited format types. Sorting and filtering is more powerful; checkboxes make it easy to construct a custom filter; and you can sort by cell or font colour. There's an option to remove duplicate rows based on specific columns. As you scroll through a long table you see the header rows at the top of the sheet without having to split and freeze the screen. Calculated columns are simpler than array formulas for repeating a formula in every row of your table, and a total row can now show other options like sum, average, count or your own formula. Even PivotTables are a little easier to work with — again you use checkboxes to select fields as well as still using drag and drop.

Excel finally gets styles for formatting cells so you don't have to re-apply font, colour, alignment and the rest one by one. The new visual annotations are a standout feature that make conditional formatting easy and effective; you can use colour or icons to highlight high and low values in a large set of numbers without needing a separate chart.

You can still record macros, though the option is a little buried on the View tab and the full macro options are on the Developer tab — which you have to choose to turn on.

BETTER ACCESS TO ACCESS

Putting a new interface on Access doesn't make it any easier to understand the complexities of relational databases and it's still a tool that shines for developers rather than casual users, but it doesn't mean that Access makes it harder either, and novices have a chance to succeed. Instead of starting with a blank screen, there's a useful set of templates — from project tracking to technical support tickets — and you get the option to link a database to a SharePoint site straight away, which is still the only real way to publish an interactive database from Access.

The ribbon emphasises the natural workflow in designing a database, from creating forms and reports to linking external data and analysing and extending your database. The visual report designer is far easier to use, and you can build your tables the way you normally would in Excel spreadsheet, by adding columns and new list values as you think of them. Access can also work with Outlook 2007 to send out emails, to collect data and populate the database with the answers automatically, saving you a lot of typing and hassle.

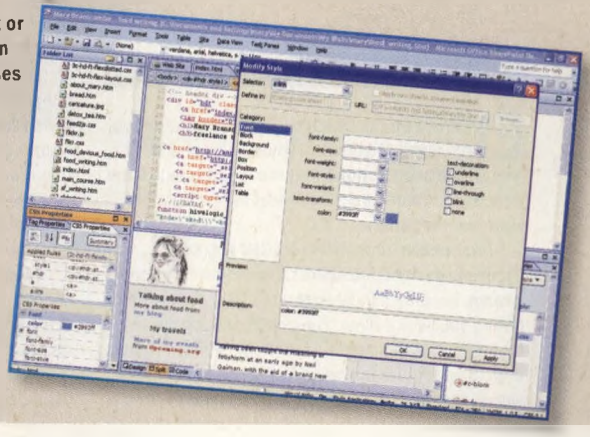
There are no new chart types in Excel, just much better-looking charts.

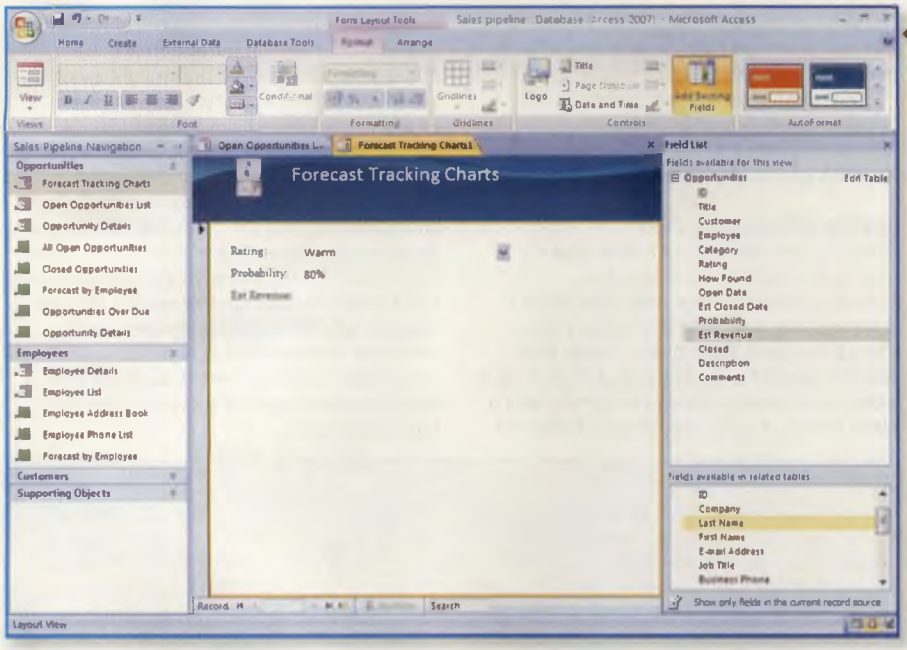
WEB DESIGN

Office SharePoint Designer

SUPPLIER Microsoft
PRICE $519
VERDICT ★★★½☆

SharePoint Designer may look like FrontPage — which it replaces in Office — but the resemblance is only a little more than skin deep. SharePoint is based on IIS, ASP.NET 2 master pages, web parts, CSS and data source controls, so it's still suitable for general web development — but Microsoft is pushing Expression Web for that. It still has the split code and design view, tag navigator, IntelliSense, tag completion, code snippets and comprehensive reports. CSS is handled well, with visual style tools created when you apply formatting directly. You're not restricted to SharePoint or FrontPage Server Extensions for data-driven sites, you can use XML and OLEDB databases via ASP.NET. When you're building a SharePoint site, the Workflow Designer can build workflows for SharePoint document libraries. Rather than writing .NET code for Workflow Foundation, it lists graphically. SharePoint Designer is a competent web design tool that's specialised for SharePoint, but it sticks to modern web design rules which may be too complex for amateur developers. However, SharePoint developers still get good tools for designing sites and applications.





Access is a more visual application, making form and report design far clearer.

The main drawback in OneNote — and the reason why you won't switch to it (for everything except documents you need to pass on to other people) is that the text handling is still inferior. Text is organised in chunks on the page and it's easier to move these than individual words. AutoCorrect works, but you have to enter new corrections by hand in a dialog box rather than right-clicking on them the way you do in Word (and no, OneNote doesn't have the ribbon interface, partly because it hasn't been around long enough to build up the amount of poorly placed options the main applications have acquired). When you check your spelling, you have to mark each correction individually; there's no change all. These minor flaws don't mar OneNote too seriously; it's an extremely useful tool for anyone who needs to take notes and deserves a wider audience than just the home and high-end business versions.

NOTE ORGANISATION

Putting OneNote into Office Home and Student 2007 runs the risk it will be seen as an app purely for education, but it's a powerful way for anyone to store and organise notes: typed, handwritten, copied from documents or "printed" into the notebook from any application. This is a major upgrade for OneNote as well; the concept of multiple notebooks means you can split personal and business information or organise any other way that suits you, because you now have a hierarchy rather than a flat list.

Audio recording is still extremely useful, because it time syncs with written notes, although for the audio search to deliver good results means recording at higher quality. It's much easier to manage the flags you can apply to notes to indicate a question you want to ask, a quote you want to remember or anything else you want to highlight — think of the asterisks and symbols you would draw in notes on paper.

For the many OneNote users who have been manually copying documents back and forth to use on both a notebook and a desktop PC, the synchronisation issue is solved elegantly with locally cached files that automatically update in both directions when you get back to the network.

THE SHAREPOINT SERVER FAMILY

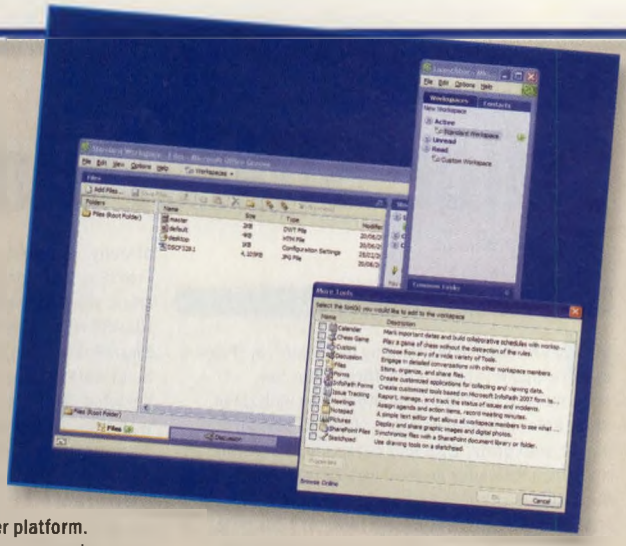
For most companies, InfoPath doesn't need to be in Office any more, because you can give copies of it to the few people who design forms — for everyone else you can run SharePoint Server or the Office Forms Server, so they can fill in the designed forms from their browser or Outlook. Microsoft wants InfoPath in Office so that more people are exposed to it, but we think OneNote and Groove are more useful for most users in business — and OneNote is useful for home users too, because whether it's a work project or a holiday, we're all researching something or other.

Office 2003 brought Office closer to SharePoint, and 2007 Office System continues

COLLABORATIVE TOOL

Office Groove 2007

SUPPLIER Microsoft
PRICE $390
VERDICT ★★★½☆

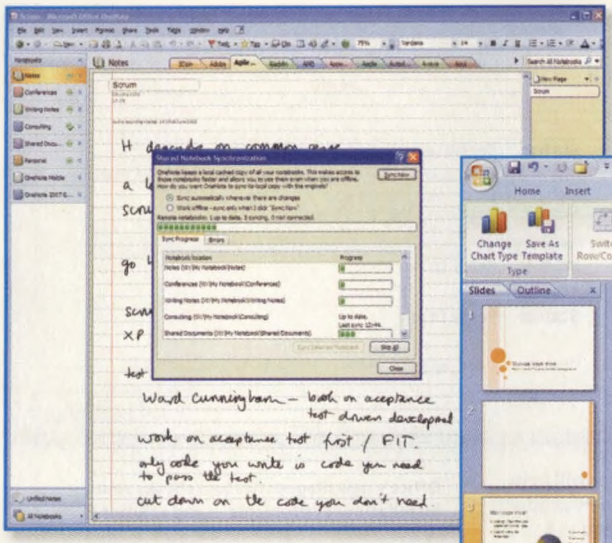


Groove 2007 is Office's new collaboration tool. It's taken Microsoft a while to integrate it with Office and Windows, but the result is worth the wait. Shared workspaces connect teams together, wherever they are.

The brainchild of Microsoft CTO Ray Ozzie, Groove is designed to share files and folders across a team, keeping a local cache of all the files and letting you work offline. You can share any file or folder on your PC, or in a SharePoint server – making it an ideal tool for taking critical network files with you on the road. Built-in version control tools mean that more than one person can work with a file at the same time.

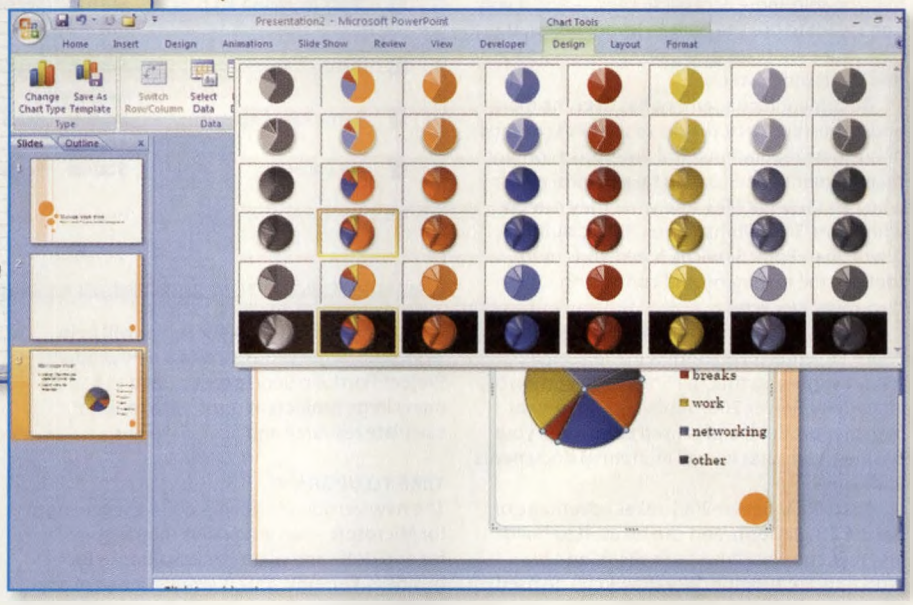
Early betas removed Groove's integral IM client in favour of the Office Communicator, but it has returned for the final release. Communication is key to effective collaboration, and informal chats work alongside Groove's more formal discussion groups.

You don't need a server for Groove, because it's a peer-to-peer platform. If you need to improve security or manage a large number of users then you'll find Groove Server 2007 a useful tool. Use the Server Manager to control users, and the Server Relay to cross any firewalls.



OneNote makes synchronising files between multiple PCs so simple we wish every application worked like this.

The new graphics shine in PowerPoint — and charts take a huge leap — but managing templates is also far simpler.



FACT FILE

Not only are the blogging tools useful if you want to spell-check blogs like anything else you write; they also mean that Word generates clean HTML for any purpose.

the process, adding a new range of Office servers and services to SharePoint. While SharePoint Server 2007 offers premium services that target large organisations, smaller businesses and teams can use SharePoint Services 3 to handle basic document sharing, as well as discussions and calendars. You can subscribe to SharePoint content in Outlook 2007, it looks set to replace Exchange's Public Folders.

SharePoint Services 3 is a big upgrade and includes the ability to add content by sending an email message to a SharePoint site. You'll find there's now mobile support, with PDA and smartphone views for lists. Other new features include social networking tools, with support for blogs and wikis. SharePoint wikis work well for smaller teams and can help build a collaborative pool of knowledge. There's also a recycle bin, so site administrators can restore documents that have accidentally been deleted. There are issues with installing SharePoint Services 3 on Small Business Server 2003.

BUSINESS DESIGN AND PLANNING

Office Visio 2007

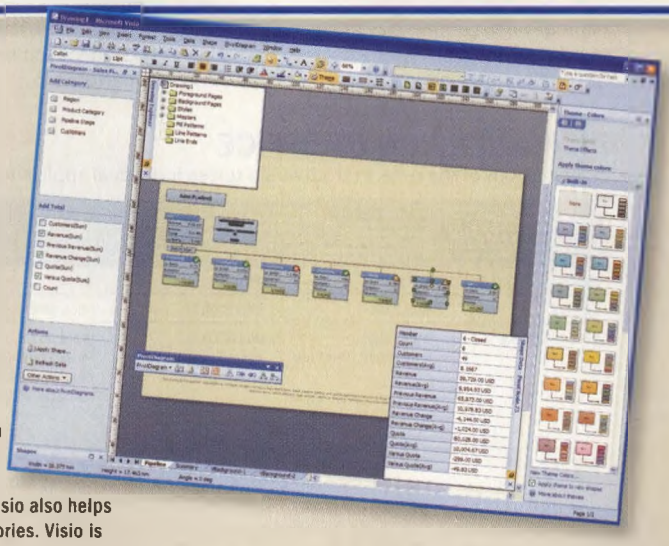
SUPPLIER Microsoft
PRICE Standard, $444; Pro, $969
VERDICT ★★★★☆

It's hard for Microsoft to improve on the original Visio after stripping out many features when it bought the product. Microsoft has continued to tighten Visio's focus, and while specialised versions are available for developers, the general purpose Visio is intended for is designing and drawing business charts and diagrams.

Visio 2007 simplifies the template and shape libraries by giving them larger previews, and makes it easier to build your drawings on its sample files.

The support for themes can give Office documents a similar look and feel, and they also handle colouring/formatting lines, shapes and text. The auto-connect feature makes it easier to hook shapes together cleanly. Integrated data helps automatically manage content of diagrams, and builds Visio into workflows and business processes.

IT managers will find the built-in ITIL tools useful, along with the IT asset management sample, which links Visio to an Excel worksheet. Visio also helps design and document Active Directories. Visio is useful for the general business user with templates for many common business diagrams that are a whole level beyond SmartArt.



SharePoint calendars now have a similar look and feel to Outlook, and, like Outlook calendars, can be overlaid to give a better picture of your day. There's a better picture all round, because improved design tools help you build more manageable, more accessible sites — and if you don't want to use the built-in layout editor, the new SharePoint Designer 2007 simplifies page and site customisation.

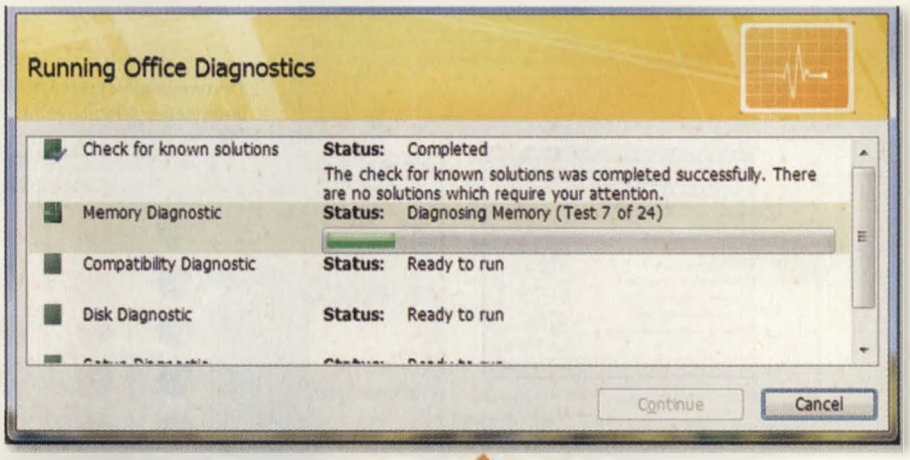
Document management has become more and more important thanks to the latest rounds of business regulations, and enterprise content management systems help take control of just who can see what files, and what they can do with them. SharePoint Server 2007 is built on top of SharePoint Services 3, and adds more tools for the managing and controlling document lifecycles.

As web content management is closely related to enterprise content management, it's not surprising that the Enterprise version of SharePoint Server 2007 replaces the Content Manager product, and is used to manage your business web sites as well as internal documents and teams.

SharePoint Server 2007 takes advantage of the .NET 3 platform, and can be used to build and manage workflows with the Windows Workflow Foundation. Workflows can be used to link documents and people together, and can even be used with the Forms Server.

There's a junior member of the SharePoint Server family. A basic search version adds enterprise search to the Office 2007 system, and two versions of SharePoint Server for Search are available, each with different index size limits. You can treat this as the missing piece of the Vista indexing tools, indexing your network alongside your PCs.

Microsoft Project 2007 isn't everyone's cup of tea, but project managers will find its new features rather useful. What-if scenario planning helps develop contingency plans, while "change highlights" show just what effects each change has on the whole project plan.


Running Office Diagnostics
Check for known solutions
Status: Completed
The check for known solutions was completed successfully. There are no solutions which require your attention.
Memory Diagnostic
Status: Diagnosing Memory (Test 7 of 24)
Compatibility Diagnostic
Status: Ready to run
Disk Diagnostic
Status: Ready to run
Continue
Cancel

Office's new diagnostics tool checks your installation for problems — and solutions.

A new version of Project Server will help work with larger projects, and a new product, Project Portfolio Server, is designed to handle many large projects at once, with tools to calculate resource and financial plans.

TIME TO UPGRADE

The new version of Office is quite a seachange for Microsoft — an innovative interface for end users and plenty of advantages for business. Outlook 2007 is streets ahead of any previous version for organising information and managing your time. Access 2007 is finally accessible to the average user. Excel makes existing features far easier to find and use and adds powerful new tools for visualising information. Word and PowerPoint have fewer brand-new tools, but the ribbon interface makes them shine again.

The advantages go beyond the core applications. Despite imperfections, OneNote has grown up to be a powerful and flexible information organiser that makes working on multiple PCs or collaborating with other users a snap. Home users do well here, as the Home & Student Edition has multiple licences and OneNote too.

Groove emerges from its transition to Microsoft without the bonsai features trimming that cut Visio down to size; you still get powerful and straightforward collaboration and file synchronisation. SharePoint Designer may look like FrontPage, but it's better-behaved and understands the new generation of web design standards, even if it is only from a Microsoft perspective. Excel and form publishing are what larger businesses have been demanding for years.

Pick a version without the also-rans to get the best value, although, even with eight versions, Microsoft doesn't make that easy. InfoPath is an excellent, flexible application for enterprise forms design, which only a fraction of users need. Publisher and Visio are competent rather than exciting. Communicator will need Live Communication Server to work and doesn't ship for months. With all that, Office finally starts to feel more like a suite than a boxful of separate applications, and it's a suite offering a productive new way of working you can't find anywhere else. apc

PICK A VERSION OF OFFICE

Eight versions of the suite, four servers, a dozen individual applications: which version of Office 2007 to choose?

	OFFICE HOME & STUDENT 2007	OFFICE STANDARD 2007	OFFICE SMALL BUSINESS 2007	OFFICE PROFESSIONAL 2007	OFFICE PROFESSIONAL PLUS 2007	OFFICE ENTERPRISE 2007	OFFICE ULTIMATE 2007
PRICE	$249	$690	$749	$849	Volume	Volume	$1,150
CONTACT	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft	Microsoft
APPLICATIONS	Word, Excel, PowerPoint, OneNote.	Word, Excel, PowerPoint, Outlook.	Word, Excel, PowerPoint, Outlook plus Business Contact Manager, Publisher.	Word, Excel, PowerPoint, Access, Outlook plus Business Contact Manager, Publisher.	Word, Excel, PowerPoint, Access, Outlook, Publisher, InfoPath, Communicator.	Word, Excel, PowerPoint, Access, Outlook, Publisher, InfoPath, Communicator, OneNote, Groove.	Word, Excel, PowerPoint, Access, Outlook plus Business Contact Manager, Publisher, InfoPath, OneNote, Groove.
WHO IT'S FOR	You don't have to be a student, just not a business, and it's a bargain: you even get multiple licences.	The key apps with the advantage of the new interface.	Primitive CRM and competent DTP may not spell business for everyone.	Adding Access makes this a full business suite; you don't get the newer tools; more innovative tools but not everyone will want them.	Communicator (ships mid-2007), InfoPath and the business apps will fit workflow processes. Adds content and rights management.	OneNote and Groove liberate Office from the standard desktop and will be more useful to many than InfoPath.	Offers home or small business all the enterprise tools (except Communicator).
VERDICT	★★★★½	★★★★☆	★★★★☆	★★★★½	★★★★½	★★★★☆	★★★★☆

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Ph: 03-95588099 Fax: 03-95589828 Email: salesvic@fortunetec.com.au

Software roundup: virtualisation

***Paul Schnackenburg* looks at the software that lets you run multiple OSs simultaneously. He benchmarks the top products.**

Virtualisation is a technology that's been hanging around the big iron of high-end servers for a long time. With recent additions to Intel and AMD processors, it's now more likely to be seen on a workstation or desktop.

The helpdesk operator who has virtual PCs with different operating systems and applications to guide end users through their problems is one user of virtualisation. The developer who tests their application in a pristine virtual OS and then wipes all changes clean for the next build is another.

On the server side, organisations take old Unix, Windows NT and other servers that run on ancient hardware and virtualise them for reliability, re-hosting legacy applications.

Product demonstration, IT training facilities, self study and many other areas are also targets for virtualisation.

Intel's vision for the home PC includes virtual machines aplenty. Evangelists will tout the ability to run a full OS for each user on a single PC as a way to keep data safe, the kids away from problem internet sites, and the ultimate form of adware and spyware protection. Just fire up a new VM every time you want to surf the web.

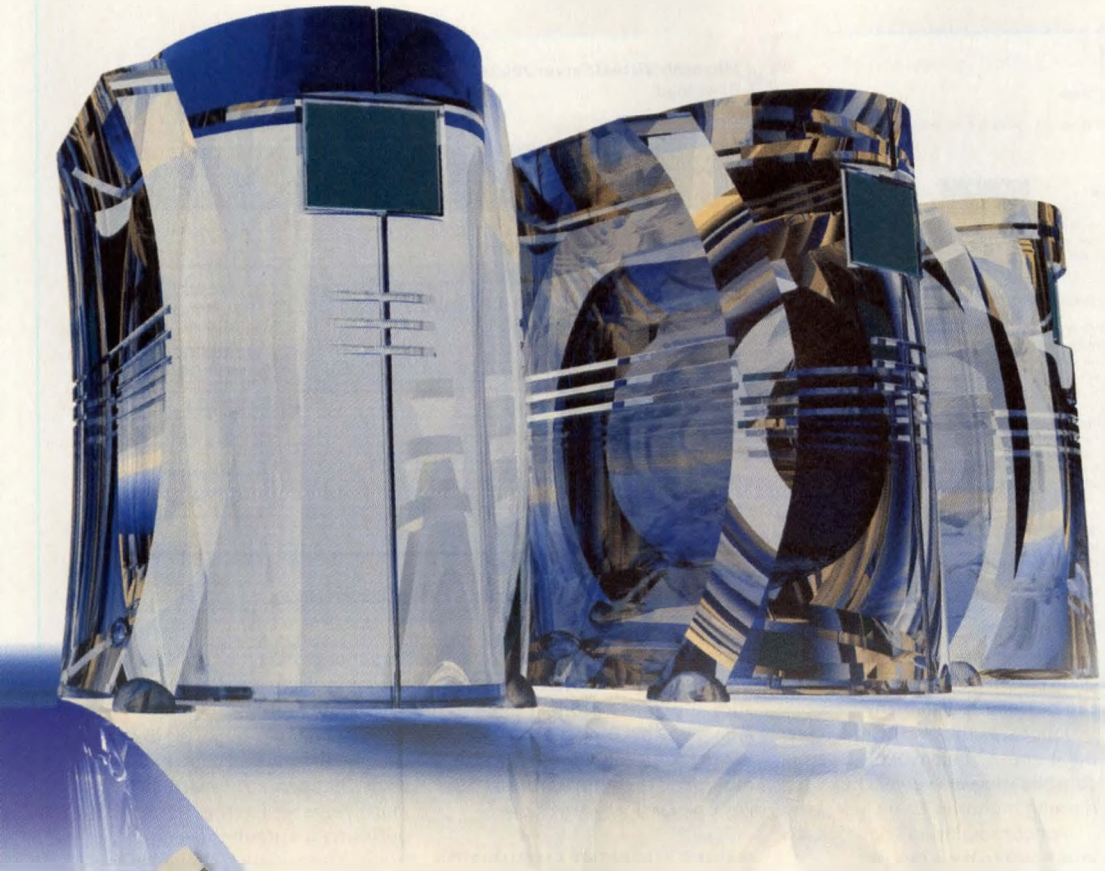
As part of disaster recovery, virtualisation can help with backup. An entire server or desktop is contained in a few large files that can easily be backed up to removable media. In a catastrophe, these files can be re-hosted on another physical computer in short order.

DIFFERENT APPROACHES TO VIRTUALISATION

Virtualisation software allows you to run, say, Windows XP on a physical PC, and then simultaneously run Linux and Windows Server in emulated computers (ie. on the same PC) with full access to all three environments. The virtual OSs have no direct access to each other but can have virtual network links to each other and to the rest of the network.

Virtual Server, VMware Server and Virtual PC are all hosted virtualisation software. They need a host operating system to run on (and share system resources between the host and guest operating systems).

VMware ESX Server, Xen Enterprise and the upcoming Hypervisor in Longhorn Server are examples of virtualisation without a host OS. With only a thin layer of software between the hardware and guest operating systems, speed is improved — often called "bare metal performance".



INSIDE INFO

- Microsoft Virtual Server home
  www.microsoft.com/windowsserversystem/virtualserver/default.mspx
- VMware Server home
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  www.moka5.com
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  www.xensource.com

THE IRONY IS THAT BOTH COMPANIES PRODUCTS CAN IMPORT THE OTHER'S FILE FORMAT AND CONVERT IT

Another major difference between these products is cost. Hosted virtualisation software is generally free or low cost, whereas ESX Server and its colleagues have higher licensing fees.

As in any IT contest, there's a fight to establish a "standard". In this case, it's the virtual hard disk format that's the battleground. VMware offers VMDK, which can be moved between its different products with ease. Microsoft on the other hand is promoting the VHD format and, since October 2006, it's supplying the format specification under the Open Specification Promise (anyone notice the "open"?).

The irony is that both companies products can import the other's file format and convert it.

One thing that Microsoft frequently points out is that the VHD format provides a clear upgrade path in the future. This is alluding to the fact that Hypervisor virtualisation will be built into Longhorn Server, support the VHD format and likely not require additional licensing costs (unlike VMware ESX server).

Speaking of licensing, Microsoft has an interesting approach. With Windows Server 2003 R2 Enterprise edition, you can run one physical host and up to four virtual servers using only one licence. With Windows Server 2003 Datacenter Edition R2, an unlimited amount of virtual guests are allowed using the one licence. This is irrespective of the virtualisation software used; in other words you don't need to use Microsoft Virtual Server. If you have a support issue however, you may need to reproduce the issue on a physical server to rule out that it's not a problem with the third party virtualisation software. Virtual servers that are turned off and only used for disaster recovery also don't need a licence until they're activated.

On the client side, Vista Enterprise gives the right to run up to four virtual copies with one licence, whereas Vista Ultimate gives you one virtual copy.

If there's any uncertainty around this being a highly competitive area, remember that up until little over a year ago, Microsoft Virtual Server 2005 Standard cost about $150 (Enterprise was over $650). VMware GSX server (the predecessor to VMware Server) was also a pay-for product. Now they're both free downloads.

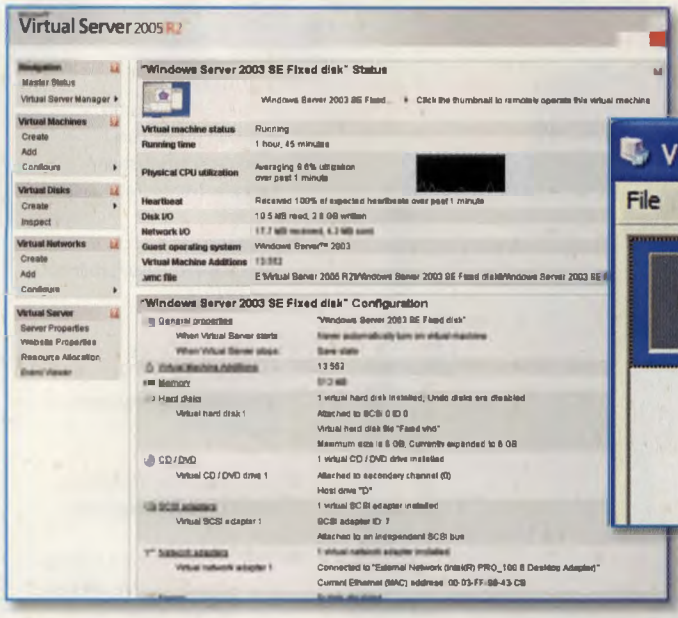
UNDER THE HOOD

On the server side, we tested the free Microsoft Virtual Server 2005 R2 (VS 2005 R2) and VMware Server, also free. Unfortunately, we couldn't test VMware ESX Server ($1,410, as part of the Starter package for two CPUs), as it's picky about the hardware it will successfully run on.

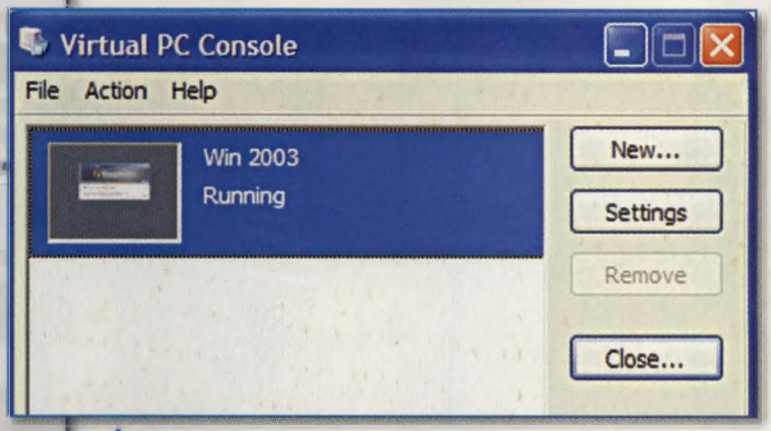
For desktop virtualisation, we tested Microsoft Virtual PC 2004 and beta 1 of Virtual PC 2007 (both free), along with VMware Workstation 5.5 ($315) and Parallels Workstation 2.2 ($65). Parallels Workstation uses a lightweight hypervisor — rather than hosted virtualisation — thus sharing access to the hardware. However, this made little difference in our performance testing.

One detracting feature of Virtual Server 2005 has been the lack of official Linux support. You could run Linux, but with no support offered it wasn't exactly enterprise-friendly. R2 however offers support for some Linux distributions with more to come. VMware Server has the upper hand with 20+ distributions supported, so if you're serious about testing many versions of Linux, the choice is easy. VMware Server also runs on many flavours of Linux, unlike VS 2005 R2, which of course only runs on Windows.

It's no secret that VMware has been honing its virtual swords for a long time. Its products support high-end features such as hot migration of running VMs (through a product called VMotion), virtual machine clustering (including VMs on different physical hosts) and SAN storage (the latter two are also supported by VS 2005 R2).



Microsoft Virtual Server 2005 R2 is available free for download.

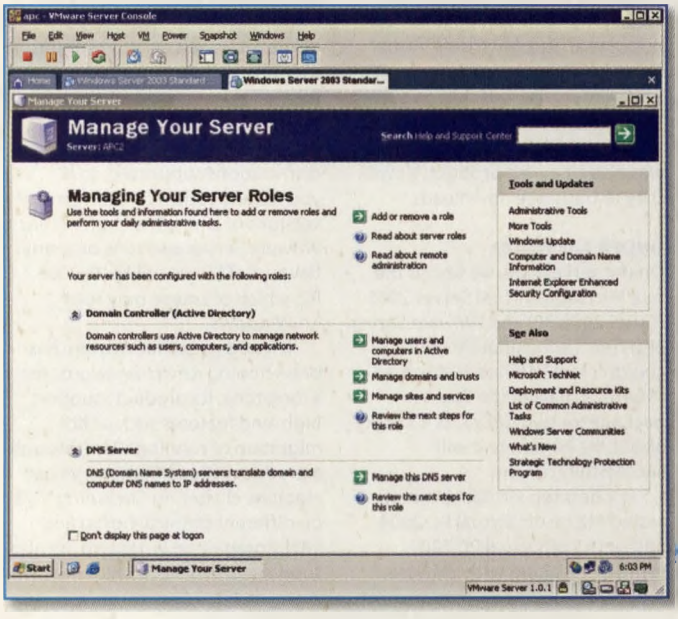


Console yourself: with Virtual PC's minimalist interface.

There's also VMware Infrastructure/Virtual Center ($5,280 Standard for two CPUs) for managing a datacentre full of VMs. Microsoft's counter offensive, System's Center Virtual Machine Manager is still in beta and not expected until late of 2007. The message here is clear: if you have a few virtual servers, we'll give you the platform for free; if you have many, you'll need to manage them with this — cough up.

One product we didn't test is SWsoft Virtuozzo. It takes a slightly different approach in that it only virtualises the host OS. You can have several Windows Server 2003 Enterprise units, for instance, running on one box — but not different operating systems. This can be beneficial in many situations, as the overhead is lower but it doesn't help when consolidating old servers or running multiple PCs on a desktop.

For consolidation scenarios, it's important to have help in converting an older physical server to a virtual one easily. VMware offers P2V assistant and Microsoft has the free Virtual Server Migration Toolkit (VSMT). A popular free tool is VMware Player — this program will run virtual machines already created, but there's no interface for creating new virtual machines.



We tested the free version of VMware Server.

For the really adventurous, bringing your VMs along on a USB stick, moka5 is a product that allows you to convert a VMware VM to the Live PC format, used by moka, and then run it from a USB key on practically any PC.

HAVING THE RIGHT AMMUNITION

On the hardware side, virtualisation is also gaining ground. Both AMD and Intel have added extensions to their newer CPUs to boost performance for virtual machines. AMD calls it AMD Virtualization (AMD-V) and Intel calls it Virtualization Technology (VT-x). You may see VT-i from Intel, which refers to the same tech on the Itanium platform.

Opteron Next Generation and some Athlon X2 are the only AMD processors that support it; similarly, only newer Xeon (3000 and 7000 series) processors offers VT-x.

On the software side, Virtual PC 2007 and Parallels Workstation offer support for these extensions, but none of the other contenders at this time.

THE SHOOTOUT

VS 2005 R2 has a clunky, web-based, interface. It's beyond our understanding why Microsoft only offer a web-based interface for configuring and running virtual machines. It takes longer to find your way around in than VMware Server or Workstation. If AD isn't available, there are also quite a few extra login prompts.

In its favour though, we like the thumbnail view that shows you what's happening in a virtual machine, as well as the performance graph showing CPU usage. The event log shown on the master page is also handy as it gives a quick overview of recent events. Finally, the web interface does offer an easy remote administration solution. But IIS is one extra component to manage.

One area where VS 2005 R2 and Virtual PC have the edge over VMware server is the technology called "differencing disks". If you need four server guests all running Windows Server 2003, but with different applications, a read-only base disk file can be created with only the operating system installed. The four individual

AND FOR MACS?

Mac users have a few choices for running Windows whilst holding on to their desktops. There's Boot Camp, but this requires a reboot to reach the Windows world (and then another to return "home").

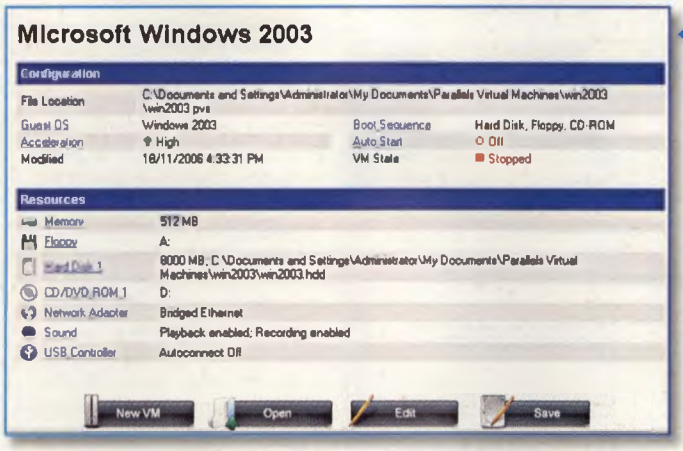
For earlier versions of the Mac, Microsoft does offer Virtual PC for Mac, version 7. It doesn't run on Intel-based Macs, however.

For newer Macs, Parallels Workstation ($105) offers a compelling alternative with adequate performance and no reboot required.

XEN MASTERS

The open source community also has solutions in this arena. One is Xen from XenSource Inc. Recently released, the new XenServer ($130 subscription annually) is specifically targeted towards the Windows community.

Then there's the free XenExpress and also XenEnterprise ($970 for two CPU sockets) — which we unfortunately couldn't test (as it *requires* a CPU with virtualisation extensions for Windows Server VMs).



Parallels Workstation 2.2 was tested for its desktop virtualisation capabilities.

configurations of the servers and their applications are stored in smaller, separate differencing disk files, greatly reducing disk footprint.

On the other hand, the snapshot features in VMware server are more powerful than the undo features of VS 2005 R2.

Configuring virtual networks in VMware's products is also easier and more flexible.

For workstation virtualisation, the user interfaces are less different between the contenders, VMware Workstation is very similar to VMware Server, whereas the minimalist interface of Virtual PC is inviting.

The best interface experience is had with Parallels Workstation; it's similar to VMware workstation but with some useful additions. The war here will undoubtedly get savage as VMware Workstation is still a pay-for product, and Virtual PC 2007 will offer almost the same performance for free.

WHO IS THE FASTEST RUNNER?

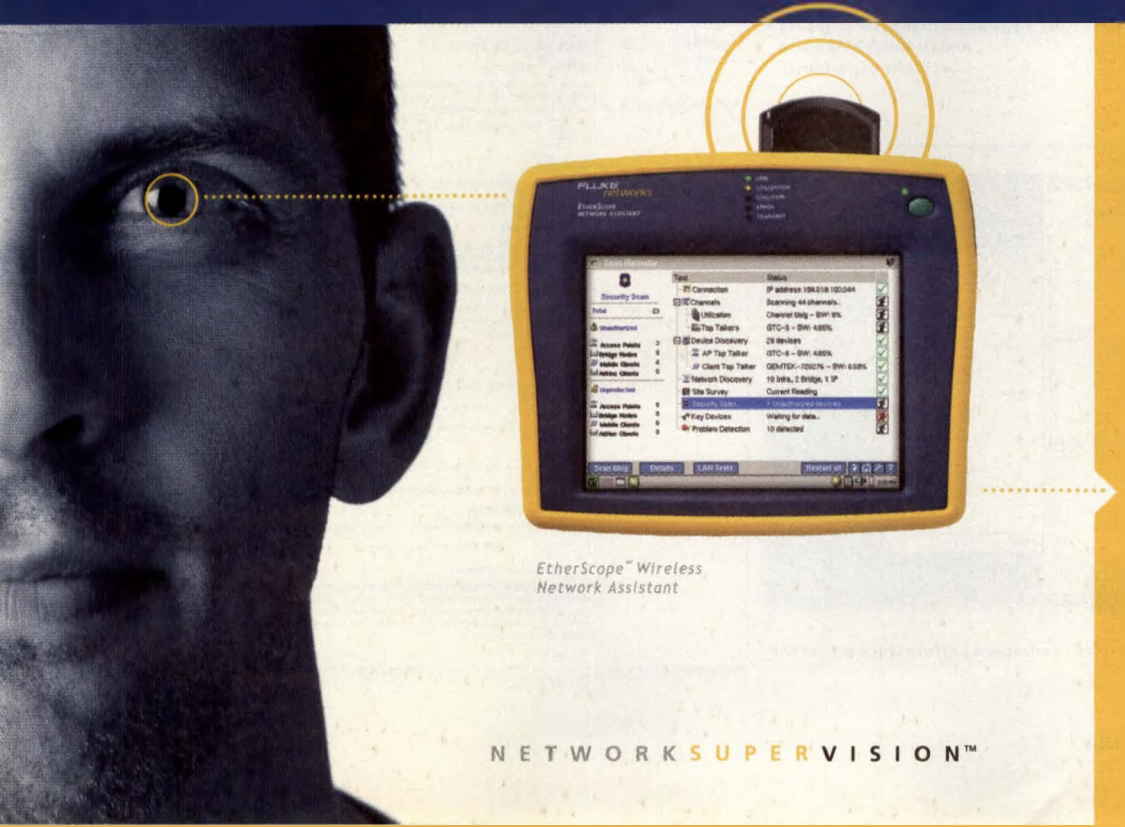
Comparing features and user interfaces on these products, whilst valuable, doesn't tell the whole story. Ultimately, if you're hosting guest server OSs that serve many users, it comes down to the most bang for the buck. If you're running demonstrations, there's nothing more embarrassing than sitting and waiting for the darn thing to start. Inevitably, there's some overhead in virtualisation, but the question is how much? And how do these products stack up against each other?

To test the server virtualisation products, we used one PC with an AMD Athlon XP 2000+, 2GB of memory (DDR PC 2700, 2 x 1GB sticks) and one 40GB 7,200rpm PATA hard disk. Whilst certainly not high-end server hardware, this system nevertheless provides adequate comparison between the different solutions.

The other system tested workstation virtualisation on a Toshiba M4 tablet laptop with a 2.13GHz Pentium M processor, 2GB of RAM (DDR2 PC2-4300, 2 x 1GB sticks) and a SATA 5400rpm notebook HDD. This system is representative of a notebook used for demonstrations and training.

On the server, the host operating system is Windows Server 2003 Enterprise Edition with SP1 and all available patches. For all guest OSs, we used Windows Server 2003 Standard. On the laptop, the

Network problem solver? Meet your new assistant.



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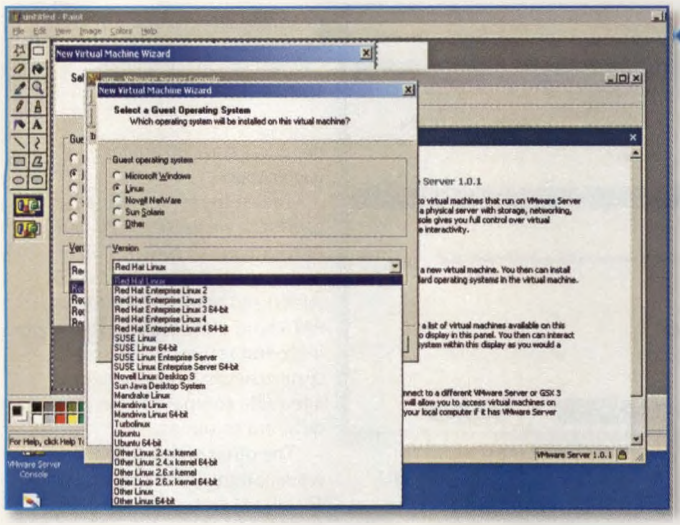


VMware server will also run on different Linux distros, unlike the Windows-only VS 2005 R2.

host OS is Windows XP SP2 (Tablet PC Edition).

The aim on both platforms was to test the time to install an OS, boot time, and general performance in use.

The installation tests from CD were timed from the moment the "power button" on the virtual machine was pressed to complete installation (and reboot to the login screen). Then the applicable VM add-on software was installed. These are a set of drivers that come with each virtualisation software package. They enhance graphics performance in particular in the VM, as well as provide seamless movement of the mouse cursor from within a virtual machine to the host OS.

After this, Active Directory was installed; the system rebooted and the time measured (booting a Windows Server with AD installed increases the boot time considerably).

Finally SiSoftware Sandra Lite 2007 SP1 was installed and run on all guest operating systems as well as the host. This synthetic benchmark measures different aspects of system performance. Using it we can compare performance between the different virtualisation solutions.

The results are on page 62 — we left the network and disk access values out as the former is affected by any host network traffic at the time and the disk tests were unreliable and varied wildly. The host systems were tested as well and assigned 100% in each test category, so that the performance of each guest could be compared to the host. There were no other guests running, nor other virtualisation software at the time of testing. Sandra, being a synthetic benchmark, will not necessarily reflect real-world performance, so read these figures as approximate guidelines only.

On the server, we also tested with both dynamic and fixed-sized disks to see if this made any difference (it didn't).

The results for Virtual PC 2004 aren't representative of real-world performance, and we ran the tests again to verify. Virtual PC has always had a reputation for abysmal performance, but these figures are exceptionally low. It seems that even though Virtual PC 2007 is still in beta, Microsoft is determined to regain ground, judging by the good scores it produced. We refrain from judging performance in beta products as a lot of code optimisation happens late in development, but, in this case, Virtual PC 2007 held its own.

Another conclusion is that, in use, VMware Server has a slight edge over VS 2005 R2 (and that disk access might be slower in VS 2005 R2).

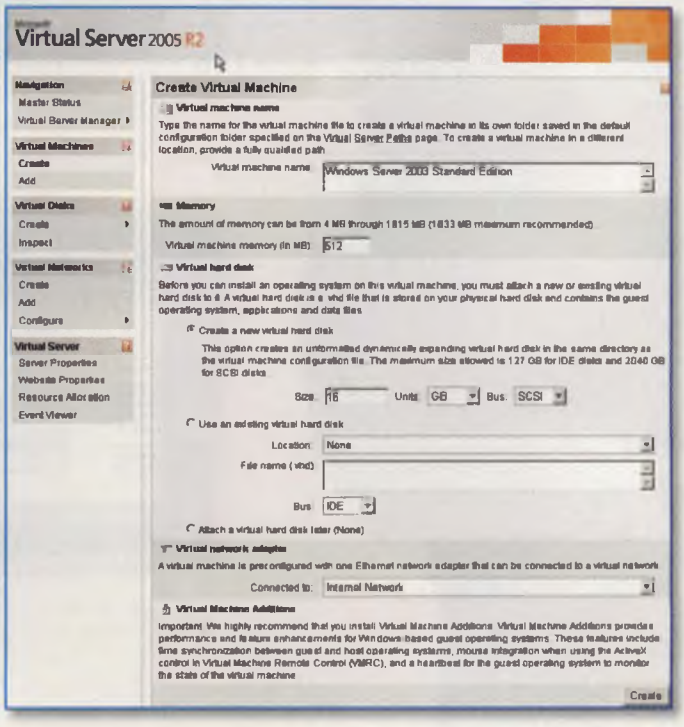
For workstation virtualisation, VMware Workstation is currently the champion, but both Virtual PC 2007 and Parallels Workstation aren't far behind.

64-BIT POWER

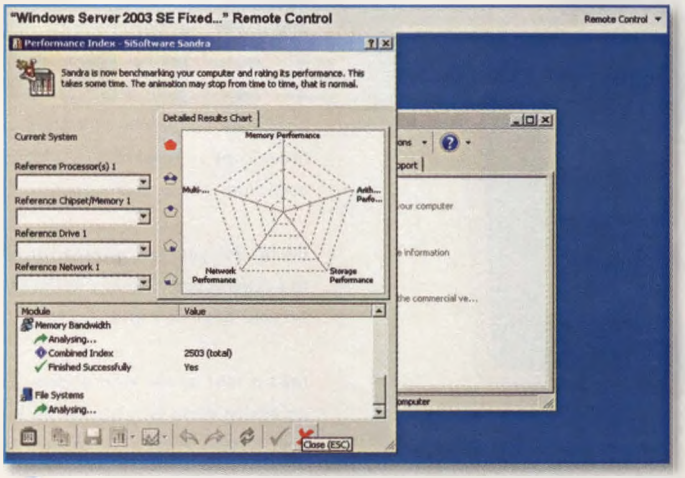
64-bit computing seems like a fantastic fit for virtualisation. The major blockage to running several guest operating systems on one server is the amount of available memory; with 64-bit computing these limits are removed. Windows XP 64-bit supports 128GB and Windows Server 2003 x64 Enterprise supports up to 1TB of RAM and up to eight CPUs.

However, the reality is not moving quite as fast as the advertising promises. Early versions of 64-bit hardware gave Windows Server 2003 x64 trouble, as chipset and BIOS need to all work together. If you're planning on running Windows Server 2003 x64, check before buying that it will definitely work for you.

The second issue is the support for x64 guest operating systems. VMware Server is the only tested product that supports this — once again, check with your hardware vendor that your particular platform will work. All other virtualisation products will *only*



The web-based interface used by VS 2005 R2 makes configuring and running VMs quite a clunky experience.



SiSoftware Sandra Lite 2007 SP1 was used to compare performance across the virtualisation solutions.

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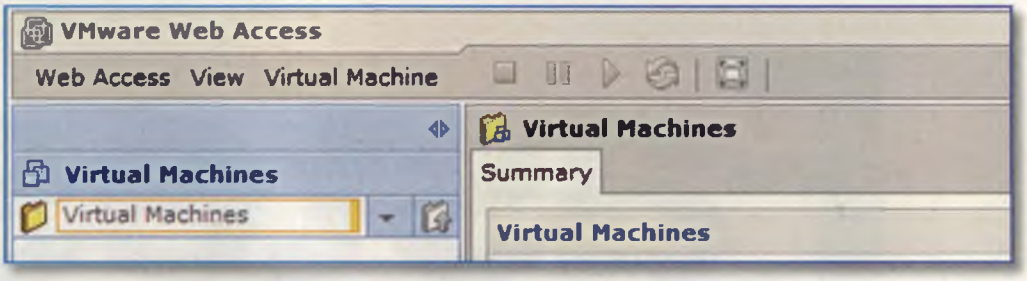

VMware's Infrastructure/Virtual Centre can be used to manage a datacentre full of virtual machines.

run 32-bit guest operating systems.

Anecdotal evidence suggests that AMD processors have the lead here (and will give you greater chance of success).

"NOTHING IS REAL, NEO — IT'S ALL THE MATRIX"

VMware pioneered the concept of pre-installed and pre-configured virtual appliances. Just download a free VMDK file and run it on the free Virtual Server and you're ready to go. Microsoft offers the VHD Test Drive program with a similar aim; only this time, some of the products are trial versions. In both cases, this is a quick way to set up a server for a specific task or outfit a classroom (for instance).

THE REAL THING

It's undeniable that with any emulation there's some loss of performance. Steps can be taken to increase the speed of VMs, however. Always install the supplied add-on driver software and make sure there's enough RAM in the host system for both the host and all running guests. The server's disk subsystem can be the bottleneck, so make sure the host has fast disks. Keep the virtual hard disk files from guests on separate disks and apart from the host OS disk. VS 2005 R2 likes virtual SCSI hard drives rather than virtual IDE drives. Finally, in production environments, make the virtual hard disks fixed in size, rather than dynamically expanding. The latter is great on a laptop where the virtual OS is used for demonstrations or teaching, but in a server consolidation scenario you don't want your server to halt just to expand the hard disk.

Also, all virtualisation software offers to disable the CD/DVD autorun feature on the host OS — otherwise hosts and guests might try to autoplay a CD simultaneously.

Another gripe with all tested applications here is the lack of USB support. When USB is supported it reverts to 1.1 rather than version 2, and sometimes only some types of devices work. BTC

EACH HOSTED VIRTUALISATION PRODUCT'S CAPABILITIES:

Product	Runs on Windows XP	Runs on Windows XP x64	Runs on Linux	Runs on Windows Server	Runs on x64 Windows Server	Supported guests	64-bit guest OS	Uses virtualisation CPUs
VMware Server	No	No	Yes – 26 versions/ distros.	Yes – all Windows 2000/2003.	Yes – all Windows 2003.	Windows 3.1 and up, all Windows server/client, many Linux distributions.	Yes	No
Virtual Server 2005 R2	Yes (non-production only).	Yes (non-production only).	No	Yes – all Windows 2003.	Yes – all Windows 2003.	Windows 2000/2003 Server, XP SP2, some Linux.	No	No
MS Virtual PC 2004	Yes	No	No	No	No	Windows 3.1 and up, all Windows server/client.	No	No
MS Virtual PC 2007 Beta	Yes	Yes	No	Windows 2003 standard only.	Yes – Windows 2003 standard.	Windows 95 and later.	No	Yes
Parallels Workstation 2.2	Yes	No	Yes	Yes – all Windows 2003.	No	Windows 3.1 and up, all Windows server/client, many Linux distributions.	No	Yes

PERFORMANCE ON THE SERVER PC FOR EACH PRODUCT:

Product	Disk type	Time to install	Install AD	Boot time (with AD)	CPU arithmetic	CPU MM	Memory bandwidth
VMware Server	Dynamic	0:29	5:30	1:50	95%	95%	83%
VMware Server	Fixed	0:29	3:42	1:39	95%	95%	83%
Virtual Server 2005 R2	Dynamic	1:14	4:27	1:55	93%	92%	76%
Virtual Server 2005 R2	Fixed	1:07	3:10	2:00	92%	92%	75%

EACH HOSTED VIRTUALISATION PRODUCT'S CAPABILITIES:

Product	Time to install	Install AD	Boot time (with AD)	CPU arithmetic	CPU MM	Memory bandwidth
MS Virtual PC 2004	0:55	4:17	2:23	6%	6%	5%
MS Virtual PC 2007 beta	0:42	6:00	3:12	95%	94%	98%
Parallels Workstation 2.2	0:47	3:17	2:26	94%	94%	95%
VMware Workstation 5.5	0:37	2:52	1:38	95%	95%	95%

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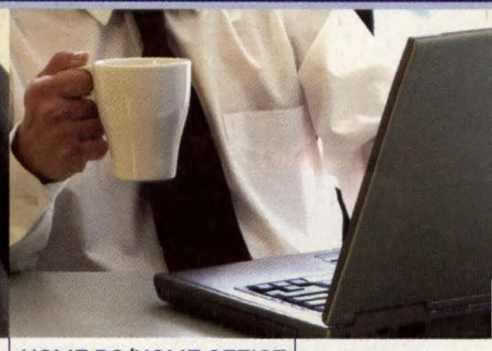

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www.exboot.com.au

Raon Digital VEGA

As seen on Television, Channel TEN's Cybershack, the Vega sports 512MB or RAM, a 30GB HDD and runs the Windows XP Operating System. It packs an impressively bright 4.3" resistive-touch screen and provides an array of hotkeys that make one-handed navigation a breeze; WiFi and VGA are included, making the Vega sure to please.
For more details contact your local reseller or phone Distributor Tegatech Australia on **1800 615 617** for more details.

Retails from $1299

Graphire Bluetooth from Wacom

Whether you are a professional presenter, designer, keen photographer or business person wanting to add greater impact to your presentations, the Graphire Bluetooth is the perfect choice for you. Compatible with Microsoft Vista, enjoy new features including note taking resources, handwriting recognition, digital inking and time-saving gesture control options. Completely wireless, you can control your home media centre or computer based gaming from anywhere in the room. Features include image editing, applying paint effects to photos with brush-like control, exploring your skills in digital art.

RRP $449 plus gst

www.wacom.com.au

MSI S300 "Crystal Collection"

MSI has redefined luxury with the new S300 "crystal collection" notebook, studded with Swarovski crystals. The Notebook stands out in a crowd with its 13.3 ACV widescreen display, 4 high quality inbuilt speakers and its stylish Glossy Coated finish. Available from MSI computers

Retails from $2399
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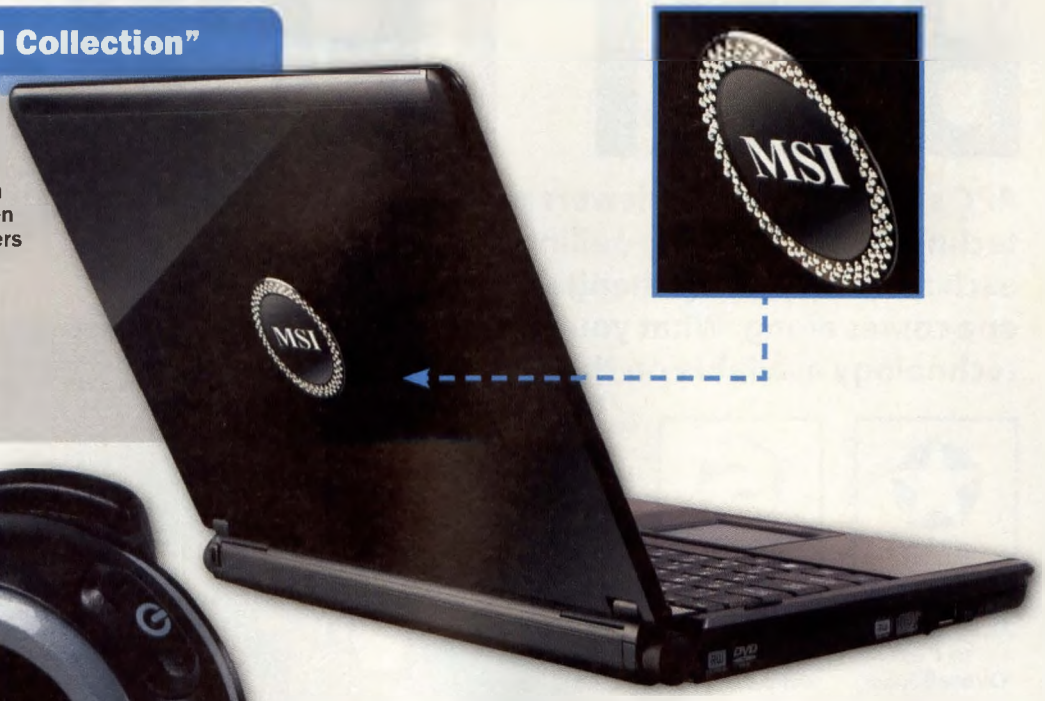

Belkin TuneCast 3

Play your MP3 or portable DVD player through your car stereo with the Belkin TuneCast 3, the universal FM Transmitter that delivers excellent quality audio performance and works with any device with a headphone jack.

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Web: www.belkin.com/anz

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BEST TECH

THE BEST GEAR IN 50 CATEGORIES! ONLINE AND IN THE MAGAZINE

APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market.

BEST OVERALL

The **Best Overall** award is for products we believe are the best, regardless of price.

BEST VALUE

The **Best Value** award is for those which offer a good combination of features for a reasonable price.

Best Tech is edited by William Maher. Contributors to the *APC* Best Tech guide: Seamus Byrne, Ashton Mills, Nick Race, Tony Sarno, Adam Turner, Dan Warne, Chris Zammit and Stephen Withers.

DESKTOP PCS – GENERAL USE

Enspire Digital Vitesse XP2

CONTACT Enspire Digital
ONLINE www.enspiredigital.com.au
PRICE $2,687 (our spec)

We specced this machine on the Enspire site, with the right mix of features for work and play. Under the hood is Intel's flagship Core 2 Duo E6600 (2.4GHz) with 1GB of RAM, a Samsung 19in 8ms screen and GeForce 7600GT graphics card. Classy touches include the Logitech MX3000 Cordless Desktop set and 5.1 speakers.

PC Quest M2 Core

CONTACT PC Quest
ONLINE www.pcquest.com.au
PRICE $1,510 (our spec)

When it comes to cheap, do-everything machines, there's a lot of rubbish out there from the big brands. Not so with PC Quest. This system has a dual-core Athlon 64 X2 3800+ on AMD's new AM2 platform, plus 1GB of RAM and a 19in LCD. Also, the ATI Radeon x1600 Pro is a capable card for occasional gaming.

DESKTOP PCS – BUSINESS

Dell OptiPlex 745 mini tower

CONTACT Dell
ONLINE www.dell.com.au
PRICE $1,419 (our spec)

With Intel's new Core 2 Duo onboard, this represents the top of the line in a business computing platform. Key features include a Core 2 Duo E6300 (1.8GHz) chip, 1GB DDR2 RAM, a 160GB Serial ATA hard drive, and 3-year next-business-day on-site warranty. Price includes 17in LCD monitor.

Dell OptiPlex GX520 mini tower

CONTACT Dell
ONLINE www.dell.com.au
PRICE $1,269 (our spec)

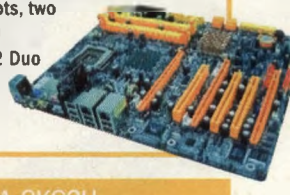
You'll get cheaper machines with a Pentium 4 or Sempron, but we think it's time for dual-core. This Pentium D box beats big names like Lenovo for price (though ASI Solutions comes close). Our spec includes a Pentium D 820 CPU, 512MB RAM, stable image and Dell OpenManage IT Assistant.

MOTHERBOARDS

EVGA Nvidia 680i motherboard

CONTACT Shadow Entertainment
ONLINE shadowentertainment.com.au
PRICE $450

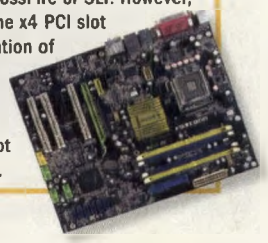
If you're building a high-performance PC based around a Core 2 Duo or Core 2 Quad, this is the motherboard to do it on. Six SATA 2 ports, PAT, two PCI Express x16 slots, two GigE ports, 10 USB 2.0 connections, full Core 2 Duo and Core 2 Quad support with a 1,066MHz FSB.



Foxconn P9657AA-8KS2H

CONTACT Foxconn
ONLINE www.foxconnchannel.com
PRICE $165

This board only has a single x16 PCI Express slot, so it can't be used for CrossFire or SLI. However, it also has one x1 and one x4 PCI slot ready for the next-generation of PCI-E expansion cards. Combine this with HD audio, five SATA and one eSATA port and you've got top value for your money.



VIDEO CARDS

Nvidia GeForce 8800 GTX

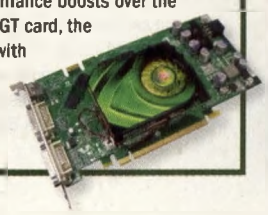
.: CONTACT Nvidia
.: ONLINE www.nvidia.com
.: PRICE Approx. $930

If you're after the most powerful beast on the graphics market, this is it (for the moment). It's hot enough to use as a BBQ, but on the upside it's DirectX 10-ready, so you'll be at the bleeding edge for gaming under Windows Vista. This card cranked out 11,840 in 3DMark06 for *APC*, beating even a CrossFire setup.

Nvidia GeForce 7600 GT

.: CONTACT Nvidia
.: ONLINE www.nvidia.com
.: PRICE Approx. $210

Nvidia's mainstream card, the GeForce 7600 GT raises the bar for price compared to performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.



LCD MONITORS

Dell 2407WFP

.: CONTACT Dell
.: ONLINE www.dell.com.au
.: PRICE $1,099

If you're a gamer or entertainment lover with cash to drop on a new monitor, look no further. This model not only offers a gorgeous 24in wide-screen monitor but doubles as a low-cost entertainment screen and TV for console gaming in high-def. Its 450cd/m² brightness and 1,000:1 contrast ratio are top-shelf.

BenQ FP71G+

.: CONTACT BenQ
.: ONLINE www.benq.com.au
.: PRICE $329

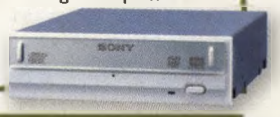
Proof that good things do come in small packages, this 17in LCD screen manages to remain at a low price point while still delivering an 8ms response time. There is no DVI, but this 1,280 x 1,024 monitor will definitely satisfy most run-of-the-mill computing jobs with ease.

OPTICAL DRIVES – DVD

Sony DRU-820

.: CONTACT Sony
.: ONLINE www.sony.com.au
.: PRICE $120

Sony's DRU-820 internal double-layer DVD burner is a ripper (if you'll excuse the pun), with support for DVD-RAM, DVD+/- and double-layer discs. It ships with Nero 6.6 and can write DVDs at up to 16x. A one-year warranty is included and the drive ships with both black and beige face-plates. An external model is also available for $239.



Pioneer DVR-A11XLA

.: CONTACT Pioneer Electronics
.: ONLINE www.pioneeraus.com.au
.: PRICE $99

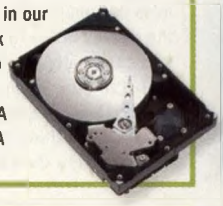
Now into its 11th-generation release, this DVD burner is a steal for only $99. Industry-leading NERO 7 Essentials burning software is included and the drive itself offers a zippy 16x burn speed. The Pioneer drive is an excellent upgrade for an ageing system and a very solid alternative to Sony's model.

INTERNAL HARD DISKS

Seagate Barracuda 7200.10 750GB

.: CONTACT Seagate
.: ONLINE www.seagate.com
.: PRICE Approx. $980

It may not be on the shelves when this issue of *APC* hits the streets, but it won't be too far off. This 750GB whopper scored well in our benchmarks and – just think about it – you only need two of these for 1.5TB of storage! It's available in PATA and SATA, but who uses PATA these days?



Seagate Barracuda 7200.10 320GB

.: CONTACT Synnex
.: ONLINE www.synnex.com.au
.: PRICE $225

It's quiet and packs plenty of punch, but be careful in tight enclosures: it's hot. Though the RRP for this drive is $225, they can be found on the street for less than $200. The 16MB cache model is fast enough for most uses, but if you're serious about video editing, splurge for a 10,000rpm drive.

EXTERNAL HARD DISKS

LaCie Bigger Disk Extreme 2TB

.: CONTACT LaCie
.: ONLINE www.lacie.com/au
.: PRICE $1,695

So your friend has been boasting about their 1TB external like it's the bee's silicon knees? Pfft – LaCie's latest release packs 2TB into a single device, tossing in three different interface options of FireWire 400, FireWire 800 and USB 2.0. As far as external drives go, it doesn't get bigger than this. For now anyway.

Maxtor Basics Personal Storage 3200

.: CONTACT Maxtor
.: ONLINE www.maxtor.com
.: PRICE $249

While the extra "0" on the name of this product was probably a very expensive marketing initiative, the actual size of the external drive is 320GB, which is a good deal for the price. Our previous entrant here was a 250GB drive for a tad near $300, so this is more space for less money.

NEW ENTRY

USB ULTRA-PORTABLE

Lexar Jumpdrive Lightning

.: CONTACT Lexar
.: ONLINE www.lexar.com.au
.: PRICE $79.95 (1GB)

This ultra-quick Lexar functions like any other memory key, but includes a PowerToGo feature – you can install apps to the drive that can be run on any PC. It doesn't make any changes to the host OS and stores files locally on the key, so you can take it all with you when you leave; ideal for students or support staff.

Sandisk Cruzer Micro

.: CONTACT Sandisk
.: ONLINE www.sandisk.com
.: PRICE $47 (1GB)

Sandisk's Cruzer Micro top-notch. The simple design includes a retractable USB connector and ships with a lanyard. The key includes the U3 software platform that allows users to install custom apps – just like Lexar's PowerToGo feature. It's a touch slower than its competitor, but it's also $20 cheaper for the 1GB capacity.

MEDIA ADAPTORS

Zensonic Z500 HD Network DVD

.: CONTACT Zensonic
.: ONLINE www.zensonic.com.au
.: PRICE $569

If you want to get your digital media from the study to the lounge room, the Z500 can handle anything you throw at it. It's a progressive-scan MPEG4/DVD player with HDCP-compatible HDMI, plus built-in Ethernet and 802.11b/g for streaming internet access and playing music, photos and movies from any PC on your home network.

Mediagate MG-350HD

.: CONTACT Anyware Computers
.: ONLINE www.anyware.com.au
.: PRICE $399

The Mediagate MG-350HD is one of the simplest ways to get high-definition action into your lounge room (up to 1,080p resolution). Whack a desktop hard drive inside and the Mediagate plays just about any audio, video or image file you care to throw at it – from the drive or via Ethernet or Wi-Fi.

NAS / MEDIA

Iomega StorCenter 1TB

.: CONTACT Iomega
.: ONLINE www.iomega.com.au
.: PRICE $1,999

The Iomega StorCenter provides a nominal terabyte of storage that can be configured as RAID 0, 1 or 5, plus Gigabit Ethernet, 802.11g wireless (WEP or WPA) and support for UPnP AV media players. Two USB ports enable connection for external drives, a shared printer or a digital camera.

Maxtor Shared Storage Plus

.: CONTACT Maxtor
.: ONLINE www.maxtor.com.au
.: PRICE $399-$699 (200GB-500GB)

Maxtor's Shared Storage Plus provides 200GB to 500GB of network storage, with the ability to stream media files to UPnP AV media adaptors – without the intervention of a PC. USB ports allow for connection of printers and external disk drives for additional storage should you need it.

SERVERS – SMALL BUSINESS

PowerEdge 2900

.: CONTACT Dell
.: ONLINE www.dell.com.au
.: PRICE From $3,487

This Dell is a beauty. It's dual-socket, dual-core and sports up to two of the new Intel Woodcrest Xeons. The default config features a single Xeon 5140 at 2.33GHz with 1,333MHz FSB, backed by 2GB of DDR2 533 FB DIMMS and an 80GB SATA II hard drive. Dell offers a 3-year on-site warranty on this hugely upgradable server.

HP ProLiant ML110 G3 SMB Bundle

.: CONTACT HP
.: ONLINE www.hp.com.au
.: PRICE $1,499

Not a real powerhouse, but the price can't be beaten. This unit is a single CPU Pentium 4 3.0GHz with 1GB of RAM and two 80GB hard disk drives. Though it won't break any speed records, it will suit a small business's needs. The server is bundled with Microsoft Small Business Server 2003 Standard Edition.

NOTEBOOKS – MEDIA CENTRE

Toshiba Qosmio G30

.: CONTACT Toshiba
.: ONLINE www.isd.toshiba.com.au
.: PRICE $5,499

Toshiba and Sony have been battling it out for a while now, and now the Qosmio and Vaio VGN-AR behemoths have been updated. Based on the new specs, we can't go past the new Qosmio G30 for sheer outright luxury. Why? The G30 now has the advantage in a few key areas, including 320GB, 2GB of RAM and Nvidia GeForce Go 7900.

NEW ENTRY

ASUS A7CC

.: CONTACT ASUS
.: ONLINE www.asus.com.au
.: PRICE $2,799

A year ago, finding a decent 17in dual-core notebook under $3,000 wasn't easy. Now you're seeing models like this ASUS, a 17in wide-screen notebook, with Core 2 Duo, 1GB RAM, TV Tuner and 100GB hard drive. It's a jump of more than $1,500 for a 17in Sony or Toshiba; this is good value.

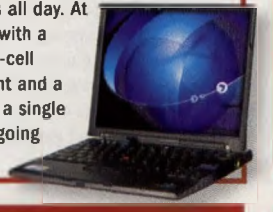
NEW ENTRY

NOTEBOOKS – BUSINESS

Lenovo ThinkPad X60

.: CONTACT Lenovo
.: ONLINE www.lenovo.com/au
.: PRICE From $2,949

Business is all about portability – after all, there's no point having a notebook if you're hopping between power points all day. At 1.67kg and shipping with a better than average 8-cell battery, the X60's eight and a half hour run-time on a single charge will keep you going all day long.



Dell Inspiron 6400

.: CONTACT Dell
.: ONLINE www.dell.com.au
.: PRICE From $1,329

It's impressive seeing Intel's Core Duo platform in a mid-sized package under $1,500. Dell hasn't skimped heavily on other key features either, including a 15.4in wide-screen LCD. The 6400 will play and burn DVDs, and battery life is rated for three hours. Weight starts at 2.8kg.

NOTEBOOKS – ULTRAPORTABLE

Toshiba Libretto

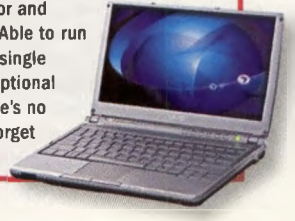
.: CONTACT Toshiba
.: ONLINE www.isd.toshiba.com.au
.: PRICE From $3,499

You had better make sure to look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).

Sony VGNTX27GPT

.: CONTACT Sony
.: ONLINE www.sony.com.au
.: PRICE $3,699

This is the bigger brother of the TX17GP. Here in the *APC* Labs we were blown away by its crisp display, tiny form factor and excellent battery life. Able to run over eight hours on a single charge (and with an optional extended battery, there's no need to worry if you forget to pack your charger).



SMARTPHONES

BlackBerry 8707G

.: CONTACT Optus
.: ONLINE www.optus.com.au
.: PRICE $999 outright (or plans)

This new BlackBerry has the basics perfected. A big, bright screen, fine-tuned QWERTY keyboard, 3G wireless that can also be used as a laptop modem and the BlackBerry email service. Once you get the hang of the keyboard shortcuts, you can whip around the 8707G's interface like lightning.

Nokia E61

.: CONTACT Nokia
.: ONLINE www.nokia.com.au
.: PRICE $749

It's hard to fault Nokia's 3G "BlackBerry Killer": it has the comfortable BlackBerry form factor along with a QWERTY keyboard and fits comfortably in your pocket – plus, you can take your pick of push email service. There are two other killer features: inbuilt Wi-Fi and Nokia's new web browser.

PRINTERS – HOME

Canon PIXMA iP5300 Bubble Jet

.: CONTACT Canon
.: ONLINE www.canon.com.au
.: PRICE $249

This is the perfect all-rounder for the home. It prints high-quality photos and churns through mono text documents at speeds of up to 31ppm, with quality approaching that of a laser. It can also print directly to CDs and DVDs. The IP5300 will deal with school projects, digital photos, documents, anything!

Epson Stylus C79

.: CONTACT Epson
.: ONLINE www.epson.com.au
.: PRICE $89

This is a cheap and cheerful printer that still delivers good results. With its four separate ink cartridges and extra-fine printing, it marries good print and photo quality with print speeds of up to 22ppm (black text) and 12ppm (colour). Be aware that your main ongoing cost will be the ink.

PRINTERS – SMALL BUSINESS

OKI C3400 LED Laser

.: CONTACT OKI
.: ONLINE www.oki.com.au
.: PRICE $878

Essentially a high-performance colour laser for just over $800. The OKI C3400 surpassed all the other sub-$1,000 lasers in our recent Labs Challenge in print speed and quality because it uses slightly different LED laser technology. Consumable costs are slightly higher because the toner cartridges only do 1,000 pages, but it's a top performer.

Lexmark E120n

.: CONTACT Lexmark
.: ONLINE www.lexmark.com.au
.: PRICE $188

The outstanding value of this package sent the *APC* office into raptures. The E120n is a 20ppm mono laser printer, with an Ethernet print server built in, for only $188. Connect it to your ADSL modem/router and you can print wirelessly from anywhere in the house. Cartridges are not expensive either.

MULTIFUNCTION – HOME

Canon Pixma MP830

.: CONTACT Canon
.: ONLINE www.canon.com.au
.: PRICE $549

The MP780's successor, the MP830 soundly beats the competition. It can print photo-lab-quality 4 x 6in home snaps and has all the gear needed by a home office, such as a copier, scanner and G3 fax machine (together with an automatic 35-page document feeder and duplexing ability).

Lexmark X5470

.: CONTACT Lexmark
.: ONLINE www.lexmark.com.au
.: PRICE $249

This Lexmark is probably the first attempt to create an multifunction printer that actually looks stylish. On top of that, the machine also performs well, with print speeds up to 25ppm black and 18ppm colour, a 10-sheet automatic document feeder, plus PC-free photo, fax and copy capabilities.

MULTIFUNCTION – BUSINESS

EPSON Aculaser CX11NF

.: CONTACT Epson
.: ONLINE www.epson.com.au
.: PRICE $1,499

This colour laser multifunction printer won three of the six tests thrown at several MFPs in *APC*'s Labs Challenge. Has good copy and scan speed, and does a great job with plain paper, where its fine detail and accurate colour impressed the judges. It can really replace your office printer, copier and fax machine.

Brother MFC-8860DN

.: CONTACT Brother
.: ONLINE www.brother.com.au
.: PRICE $1,199

A mono (rather than colour) laser, this still has all the components to make it a powerful office or small department performer – such as a 28ppm network laser printer, a copier and a scanner with built-in duplexing, as well as LDAP capability (for accessing directory services). A great all-rounder for the price.

ADSL2+ MODEM/ROUTERS

Billion 7404VGP

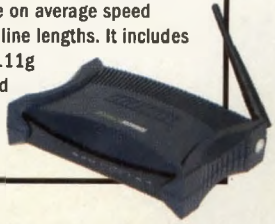
.: CONTACT PC Range
.: ONLINE www.billion.com.au
.: PRICE $299

It's hard to beat on features and price. For your $299, you get one of the fastest ADSL2+ modems in terms of actual throughput (average over 1km and 3.5km phone line length), robust 802.11g wireless networking (supporting WPA2 security) and four Ethernet ports. There's inbuilt VoIP and PSTN passthrough (if the VoIP ever fails).

Billion 7300G

.: CONTACT PC Range
.: ONLINE www.billion.com.au
.: PRICE $169

Despite its low price, the Billion 7300G managed to trump all the other modems in our most recent ADSL2+ Labs Challenge on average speed across 1km and 3.5km line lengths. It includes four 10/100 ports, 802.11g (including WEP, WPA and WPA-2 security), plus it features configurable Quality of Service, too.



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WIRELESS APs & ROUTERS

Linksys Wireless-N WRT300N

.: CONTACT Linksys
.: ONLINE www.linksys.com.au
.: PRICE $279.95

We're still not overly convinced that Draft N devices are the best devices in the long term, but if you want more speed for now, at least it gives you a chance of compatibility between brands and some hope of a firmware upgrade further down the track. The WRT300N has the best range among the Draft N routers we've tested so far.

TP-Link TL-WR541G

.: CONTACT Anyware
.: ONLINE www.anyware.com.au
.: PRICE $75

In our tests the TL-WR541G delivered solid connections at the same range as routers costing much more. It has the usual four-port 10/100 Ethernet switch plus regular features such as a (relatively simple) firewall, access controls, WPA2 authentication, DHCP and port triggering.

VOIP ADAPTORS

Netcomm V300

.: CONTACT NetComm
.: ONLINE www.netcomm.com.au
.: PRICE $199

Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In *APC*'s testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.

Netcomm V100

.: CONTACT NetComm
.: ONLINE www.netcomm.com.au
.: PRICE $128

Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more diddling around with configurations, but we're attracted to the simplicity.

GPS DEVICES

TomTom GO 910

.: CONTACT TomTom
.: ONLINE www.tomtom.com
.: PRICE $1,179

Feature-crammed, with a 480 x 272 pixel TFT LCD touchscreen, 3D navigation software, maps of three continents on its 20GB hard disk and countless route options and points of interest. Best of all is its lightning-fast reaction time, immediately picking unexpected route changes and aligning maps quickly.

Navman N40i

.: CONTACT Navman Australia
.: ONLINE www.navman.com
.: PRICE $899

The N Series takes up the NavPix "image-based navigation" theme and delivers it in an even smaller package. Compared to the N60i it has a smaller colour touchscreen and less flash memory. But, with an RRP of $899, it has to be one of the best value GPS in-car units on the market today.

DIGITAL STILL CAMERAS

Canon PowerShot G7

.: CONTACT Canon
.: ONLINE www.canon.com.au
.: PRICE $899

Here is an excellent example of the power you can get without dropping all your dough on a DSLR. Short of interchangeable lensing, the G7 still delivers excellent manual controls and a wealth of features unmatched by most of the non-SLR digital market. Very big prints are viable with its 10MP resolution.

Panasonic Lumix DMC-FX01

.: CONTACT Panasonic
.: ONLINE www.panasonic.com.au
.: PRICE $549

The Lumix camera range features excellent Leica lensing, and the FX01 delivers a wide-angle 28mm lens with a zoom range out to 102mm. For the money spent, you're getting 6MP resolution along with some first-rate optical stabilisation. The 2.5in LCD is extremely bright.

DIGITAL VIDEO CAMERAS

Panasonic AG-HVX202EN

.: CONTACT Panasonic
.: ONLINE www.panasonic.com.au
.: PRICE $9,900

The first of the next-generation pro-grade cameras (and inside $10K). Record in DV or various DVCPRO formats, with support for 720p and 1080i HD. With support for DV tape and the new P2 flash media format, as well as pro audio features and new lensing technology, this is nova hot right now.

Hitachi Hybrid DZ-HS301

.: CONTACT Hitachi
.: ONLINE http://aus.hitachi.com.au/
.: PRICE $1,449

This is a DVD/HDD combo cam. Hitachi's new hybrid gives you more control over video quality and greater recording times, with up to three hours at DVD quality and six at "standard". You also get in-camera editing before you output to disc, making it perfect for those fearful of editing on a PC.

NEW ENTRY

PROJECTORS

Optoma HD72

.: CONTACT Amber Technology
.: ONLINE www.ambertech.com.au
.: PRICE $4,750

Optoma's outstanding DLP-based projector offers full 720p HD resolution for less than $5,000. The 3.1kg unit produces a clear, consistent image with controls to adjust brightness, contrast, image shift and keystone, through dedicated buttons on the remote control. This helps the viewer adjust the image to match each movie.

Dell 1800MP

.: CONTACT Dell
.: ONLINE wwww.dell.com.au
.: PRICE $1,398.10

Meet the Dell 1800MP, a DLP machine with XGA resolution and brightness of 2,100 lumens. Its 1,024 x 768 resolution and contrast ratio of 2,000:1 are generally found on higher-priced projectors. Downside? Slightly louder fan (36Db) and butt-ugly design, but who cares when it comes at this price?

NEW ENTRY

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TV TUNERS

Pinnacle PCTV 310i

CONTACT Lako Pacific
ONLINE www.lakopacific.com
PRICE $199.99

What's not to like about the 310i? With analogue and digital TV tuners (plus FM radio) on one card, it's the complete package. The software delivers PVR features with recording to DivX or MPEG-2 files, or direct to DVD. A remote control is included; there's even an S-Video/composite input to digitise analogue home videos.

Compro VideoMate U500

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE $99

The Compro VideoMate U500 is a USB dongle, so you can use it with desktops or notebooks (but you may need a better antenna than the one included in order to receive all channels). Scheduled recording is easy enough to set up, plus it's possible to record directly to a DVD or an ISO.

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Get all our inside tips on the best notebooks, LCD TVs, modems, printers and more.

HD TVs

Sony Bravia KDL40X2000

CONTACT Sony
ONLINE www.sony.com.au
PRICE $5,499

The Bravia is set apart from the competition by its signature styling, featuring a "floating glass" design – this screen looks expensive, and it is. This is full HD resolution of 1,920 x 1,080, unlike some cheaper value screens (see Acer's value range). For the price, you're also getting an integrated HD digital tuner and 2 HDMI inputs.

Acer AT3705-DTV

CONTACT Acer
ONLINE www.acer.com.au
PRICE $2,899

Sure, this high-definition television isn't a traditional audio-visual brand, but Acer are definitely good value for money. For less than $3,000 you're getting a 37in full high-definition resolution (1,920 x 1,080) LCD screen including analogue and digital TV tuners.

PERSONAL VIDEO RECORDERS

Topfield TF6000PVRt

CONTACT Topfield
ONLINE www.topfield.com.au
PRICE $1,249

The addition of Wi-Fi provides wireless downloads of electronic program guides from IceTV, allowing you to record TV shows by name rather than timeslot. This Topfield has dual digital tuners and a 200GB hard drive (was 160GB). It's also now easier to copy files off the unit for playback on your PC.

Foxtel iQ

CONTACT Foxtel
ONLINE www.foxtel.com.au
PRICE $14.95/mth

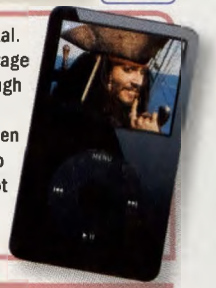
Admittedly, the 160GB Foxtel iQ sits awkwardly in the category of PVRs, because it's inextricably tied to Foxtel's Pay TV service. But if you do happen to be a Foxtel subscriber, the 160GB IQ is absolutely worth the money. Foxtel has removed the upfront fee, so it's now just $14.95 a month.

PORTABLE MUSIC PLAYERS

iPod 80GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE $499

Now this is getting really mental. Truly an insane amount of storage (20,000 songs), which is enough to knock Creative's Zen Vision: off the top of our list. The screen is now brighter and gives up to 20 hours of battery life. It's not cheap, but yet again, Apple's iPod is the best.



iPod shuffle 1GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE $119

We're not turning into iPod fanboys, but for RRP value we still can't go past the shuffle, which has had a design overhaul and a price cut. It's now so small that fashion models must use their fingertips to hold it in press photos. 1GB of memory gives you up to 240 songs.

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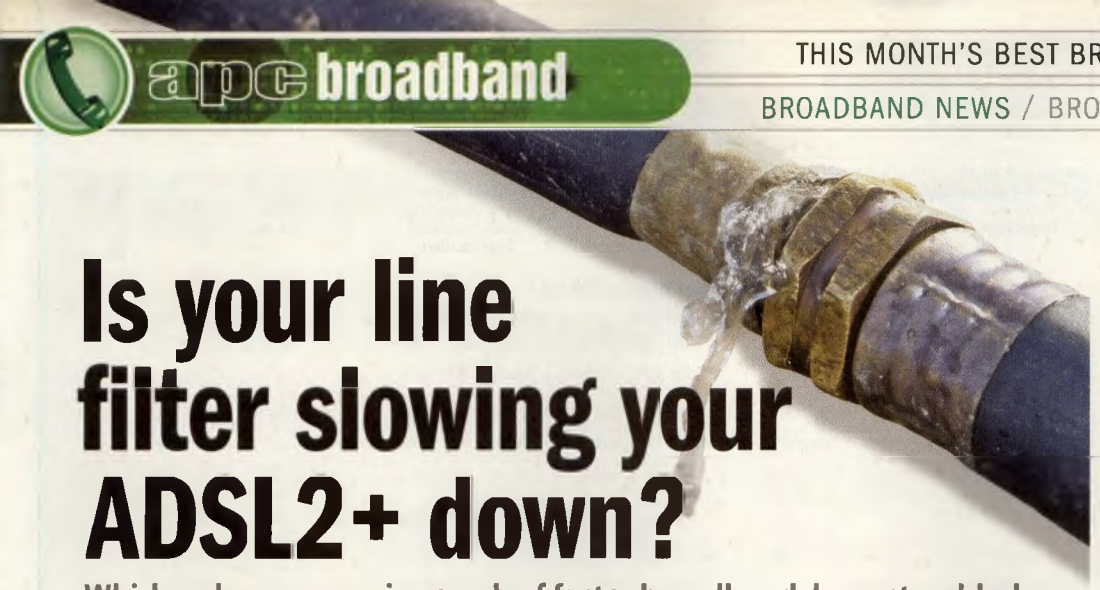
[*]Not on MFC-3360C. [¥]On MFC-665CW only. [#]Not on MFC-240C, MFC-3360C. [^]RRP Incl. GST.



Is your line filter slowing your ADSL2+ down?

Whirlpool users, ever in search of faster broadband, have stumbled on some home truths about old, cheap ADSL line filters, *Dan Warne* reports.

Millions of line filters shipped out with ADSL1 modems may not be fully compatible with ADSL2+ signals and could be causing signal degradation, reducing overall sync speed, Whirlpool users have discovered.

Line filters are the small tic-tac or lipstick-case-sized boxes that sit between the phone plug and any non ADSL devices in your house such as phones and faxes. They are designed to filter out the ADSL signal on non-ADSL devices so that you don't hear a hiss when you're on the phone. More importantly, however, they prevent other devices from corrupting the ADSL signal.

However, line filters shipped with ADSL1 modems were only tested to filter up to 1.1MHz — the spectrum used by ADSL1 — not the full 2.2MHz used by ADSL2+.

Telstra has a specification for ADSL2+ line filters, called RCIT.0004, and the telco provides a web page that lists filters that meet the specification — and those that don't (**http://snipurl.com/17gyy**).

Whirlpool users say that they've observed that under some circumstances, badly designed line filters can cause other, more fundamental problems beyond reduced ADSL speeds, including line noise/hiss when on calls or phones not ringing (especially cordless ones, for some reason).

The Telstra-endorsed line filters can be found online for as little as $16, so if you want to ensure you're getting the best ADSL line speed possible, it's worth going for one of these over the ultra-cheap no-name filters that can be found for as little as $3.30.

However, buying a Telstra-certified filter isn't necessarily a guarantee of quality, according to some Whirlpool users. One, posting under the handle of "joules" says: "It's interesting (to say the least) that several filters 'approved' by Telstra appear to generate noise on the line. The noise test may not be a part of RCIT.0004, but I thought not generating noise on the line was a golden rule for any equipment connected to it."

Whirlpool's Wiki on the subject can be read at **http://snipurl.com/17gz6** and a forum discussion is at **http://snipurl.com/17gzt**.

in brief

8MBIT/s ADSL IS LIVE

Popular ISP Internode has switched on access to Telstra's 8Mbit/s ADSL1, which is now available in all ADSL-enabled phone exchanges.

"Awesome, 1.5Mbit/s is like dialup to me now," said one ecstatic user on **Whirlpool.net.au**'s discussion forums.

Internode customers who want the extra speed have to log in to their account settings page and select one of Internode's new 8Mbit/s plans, which cost about $10/mth more.

Some users who have an old modem at the back of the cupboard have found that different brands of modems achieve better speeds than other brands (in contrast to how virtually all could easily handle Telstra's speed-hobbled 1.5Mbit/s connections).

Other ISPs now offering 8Mbit/s plans include TPG, People Telecom, Amnet, G-Node, BigPond and aaNet.

your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (***broadbandchoice.com.au***) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of *APC* readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under $35/month.

Light plan: cheapest deal under $60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under $80/month, at least 512Kbit/s and 10GB data.

High-speed: cheapest 1.5Mbit/s plan under $100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 15 January 2007.

Name	Online	Budget plan (under $35)	Light plan (under $60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under $80, at least 512Kb/s, minimum 10GB data limit)	High-speed plan (under $100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Superfast broadband ISPs (faster than 1.5Mb/s)									
Dodo ADSL2+	www.dodo.com.au	$29.90†* 1GB+^24Mb/s	$29.90†* 1GB+^24Mb/s	$59.90†* 20GB+^24Mb/s	$49.90†* 10GB+^24Mb/s	✔	$1.95	$99 12mths	✘
HostCore DSL2	www.hostcoredsl.com.au	$29.95† 1GB 24Mb/s	$29.95† 1GB 24Mb/s	$69.95† 50GB 24Mb/s	$49.95† 10GB 24Mb/s	✘	$1.95	$149.95 1mth	✘
iiNet broadband2+ ADSL (24Mbit)	www.iinet.net.au	$29.95† 500MB+ 24Mb/s	$39.95 1GB 3Mb/s	$69.95† 20GB+ 24Mb/s	$59.95† 10GB+ 24Mb/s	✘	✔	$79.95 6mths	✘
Internode Extreme ADSL2+	www.internode.on.net	N/A	$59.95 20GB 24Mb/s	$79.95 40GB 24Mb/s	$59.95 20GB 24Mb/s	✘	✔	$129 6mths	✘
Koala ADSL 2+	www.koalatelecom.com.au	$34.95† 500MB 24Mb/s	$44.95† 5GB 24Mb/s	$79.95† 75GB 24Mb/s	$49.95† 10GB 24Mb/s	✔	✔	$149.95 6mths	✘
Letsgo Go ADSL2+ 24Mbit	www.letsgo.com.au	N/A	$39.95† 60GB 24Mb/s	$39.95† 60GB 24Mb/s	$39.95† 60GB 24Mb/s	✘	✔	$50 12mths	✘
OptusNet Cable	http://broadbandsales.optusnet.com.au	$29.95† 300MB+ 10Mb/s	$39.95† 2GB+ 10Mb/s	$69.95† 20GB+ 10Mb/s	$69.95† 20GB+ 10Mb/s	✘	✔	$89 12mths	✘
OptusNet DSL Direct	http://broadbandsales.optusnet.com.au	$29.95† 300MB+ 24Mb/s	$39.95† 2GB+ 24Mb/s	$69.95† 20GB+ 24Mb/s	$69.95† 20GB+ 24Mb/s	✘	✔	$89 12mths	✘
Primus up to 8000Kbps	www.primus.com.au	$29.95† 1GB 8Mb/s	$29.95† 1GB 8Mb/s	$69.95† 20GB 8Mb/s	$59.95† 10GB 8Mb/s	✘	✔	$118 1mth	✔
Telstra BigPond Cable	www.bigpond.com	$29.95* 200MB^8Mb/s	$59.95† 10GB^8Mb/s	$59.95† 10GB^8Mb/s	$59.95† 10GB^8Mb/s	✘	✘	$189 12mths#	✘
TPG Residential ADSL2+	www.tpg.com.au	$29.99* 600MB 24Mb/s	$39.99 3GB 24Mb/s	$59.99 30GB 24Mb/s	$49.99 18GB 24Mb/s	✘	✔	$59.95 12mths	✘
Regular broadband ISPs (1.5Mb/s or less)									
.Netcall ADSL	www.netcall.com.au	$24* 500MB 256Kb/s	$30* 1GB 512Kb/s	$50* 24GB 512Kb/s	$69* 18GB 1.5Mb/s	✔	✘	$130 6mths	✔
.Netcall ADSL	www.netcall.com.au	$29* 2GB 256Kb/s	$29* 1GB 512Kb/s	$50* 24GB 512Kb/s	$70* 18GB 1.5Mb/s	✔	✘	$110 12mths	✔
1 2 3 ADSL	www.123.net.au	$29.99†* 200MB 256Kb/s	$49.99†* 1.5GB 512Kb/s	$69.99† No limit 512Kb/s	N/A	✔	✔	$129 6mths	✔
aaNet ADSL	www.aanet.net.au	$27.90* 1GB+ 256Kb/s	$33.90* 1GB+ 512Kb/s	$74.90* 36GB+ 512Kb/s	$54.90* 14GB+ 1.5Mb/s	✔	✔	$145 6mths	✔
aaNet ADSL	www.aanet.net.au	$24.90* 1GB+ 256Kb/s	$29.90* 1GB+ 512Kb/s	$79.90* 48GB+ 1.5Mb/s	$49.90* 14GB+ 1.5Mb/s	✔	✔	$145 12mths	✔
AAPT ADSL	www.aapt.com.au	$29† 500MB 256Kb/s	$39† 12GB 512Kb/s	$49† 15GB 1.5Mb/s	$49† 15GB 1.5Mb/s	✔	✔	$0 1mth	✔
Accsoft Freeway ADSL	www.onmyweb.net	N/A	$52.95 1.5GB 512Kb/s	$75.95 15GB 512Kb/s	$98.95 10GB 1.5Mb/s	✔	✔	$132 6mths	✔
Aspark ADSL	www.aspark.com.au	N/A	$53.95† 25GB 512Kb/s	$53.95† 25GB 512Kb/s	$99.95† 35GB 1.5Mb/s	✔	✔	$110 1mth	✔
AuNix Broadband	www.aunix.com.au	$29.95† 15GB 256Kb/s	$39.95† 25GB 512Kb/s	$74.95† 35GB 1.5Mb/s	$74.95† 35GB 1.5Mb/s	✔	✔	$99 6mths	✔
Auritel Broadband	www.auritel.com.au	N/A	$59.95 25GB 512Kb/s	$59.95 25GB 512Kb/s	$89.95 35GB 1.5Mb/s	✔	✘	$129 6mths	✔
Aussiewide Residential ADSL	www.aussiewide.com	N/A	$59.95 30GB 512Kb/s	$59.95 30GB 512Kb/s	$99 30GB 1.5Mb/s	✔	✔	$110 6mths	✔
Australia On Line ADSL	www.australiaonline.net.au	$16.95* 200MB 256Kb/s	$39.95 2GB 512Kb/s	$54.95 No limit 512Kb/s	$94.95 No limit 1.5Mb/s	✔	✔	$99 6mths	✔
Australis Internet ADSL	www.australis.net	$24.95* 200MB 256Kb/s	$49.95 5GB 512Kb/s	$64.95 30GB 512Kb/s	$79.95 10GB 1.5Mb/s	✔	✔	$169 1mth	✔
B Digital ADSL	www.mysoul.com.au	$34.95† 5GB 256Kb/s	$44.95† 5GB 512Kb/s	$64.95† 10GB 1.5Mb/s	$64.95† 10GB 1.5Mb/s	✔	✔	$119 6mths	✔
BIT.net	www.bit.net.au	$19.95† 2GB 256Kb/s	$29.95† 2GB 512Kb/s	$69.95† 40GB 512Kb/s	$59.95† 10GB 1.5Mb/s	✔	✔	$132 6mths	✔
BKB Internet Home ADSL	www.bkb.net.au	N/A	$49.95 1GB^512Kb/s	$64.95 10GB^512Kb/s	$89.95 10GB^1.5Mb/s	✔	✔	$139 6mths	✔
Blackstump ADSL	www.blackstump.net.au	$19.95†* 200MB 256Kb/s	$44.95† 5GB 512Kb/s	$55.95† No limit 512Kb/s	$72.45†* 10GB 1.5Mb/s	✔	✔	$108 6mths	✔
Bluemaxx ADSL	www.bluemaxx.net.au	$24.95* 200MB 256Kb/s	$54.95 5GB 512Kb/s	$74.95 30GB 512Kb/s	$84.95 10GB 1.5Mb/s	✔	✔	$105 12mths	✔
BBI Flat Rate DSL	www.brownbear.net.au	$32.95 2GB 256Kb/s	$39.95 2GB 512Kb/s	$74.95 60GB 512Kb/s	$81.95 15GB 1.5Mb/s	✔	✔	$119 6mths	✔
BBI Excess DSL	www.brownbear.net.au	$32.95* 2GB 256Kb/s	$39.95* 2GB 512Kb/s	$74.95* 60GB 512Kb/s	$81.95* 15GB 1.5Mb/s	✔	✔	$119 6mths	✔
Brown Bear DSL/Phone	www.brownbear.net.au	$19.95†* 1GB 256Kb/s	$29.95†* 1GB 512Kb/s	$69.95† 60GB 512Kb/s	$76.95† 15GB 1.5Mb/s	✔	✔	$119 6mths	✔
Bullet ADSL	www.bullet.net.au	$34.95* 500MB 256Kb/s	$49.95* 5GB 512Kb/s	$69.95* 25GB 512Kb/s	N/A	✔	✔	$150 12mths	✔
CEinternet Broadband	www.ceinternet.com.au	$29.95* 200MB 256Kb/s	N/A	$79.95 10GB 512Kb/s	$99.95 10GB 1.5Mb/s	✔	$2.50	$99 1mth	✔
Central Coast Internet ADSL	www.cci.net.au	$34.95* 500MB 256Kb/s	$54.95* 1GB 512Kb/s	$64.95* 10GB 512Kb/s	N/A	✔	✔	$132 6mths	✔
Comcen Internet	www.comcen.com.au	$19.99* 200MB 256Kb/s	$39.99* 1GB+ 512Kb/s	$79.99 No limit 512Kb/s	$69.99* 15GB+ 1.5Mb/s	✔	✔	$99 6mths	✔
Comstech Systems ADSL	www.comstech.com.au	$32.95 500MB 256Kb/s	$44.95 3GB 512Kb/s	$69.95 50GB 512Kb/s	$74.95 25GB 1.5Mb/s	✔	✔	$129.95 6mths	✔
Concept Networks ADSL	www.conceptual.net.au	$29.95* 500MB 256Kb/s	$39.95* 1GB 512Kb/s	$69.95 No limit 512Kb/s	$79.95* 15GB 1.5Mb/s	✔	✔	$99 6mths	✔
Connexus Home ADSL	www.connexus.net.au	$27.95* 200MB^256Kb/s	$59.95 10GB^512Kb/s	$59.95 10GB^512Kb/s	N/A	✔	✔	$149 6mths	✔
CyberOne ADSL	www.cyberone.com.au	$19.95†* 200MB256Kb/s	$39.95†* 1GB 512Kb/s	$64.95† No limit 512Kb/s	$74.95† 15GB 1.5Mb/s	✔	✔	$99 6mths	✔
Cyberspace Internet ADSL	www.cyberspace.net.au	$21.95†* 200MB 256Kb/s	$46.95†* 5GB 512Kb/s	$57.95† No limit 512Kb/s	$79.95†* 10GB 1.5Mb/s	✔	✔	$99 6mths	✔
DCSI	www.dcsi.net.au	$29.95 500MB 256Kb/s	$49.95 10GB 512Kb/s	$59.95 20GB 512Kb/s	$79.95 20GB 1.5Mb/s	✔	✔	$125 6mths	✔
Diamond Telecom ADSL	www.diamondtelecom.com.au	N/A	$49.95† 25GB 512Kb/s	$49.95† 25GB 512Kb/s	$84.95† 35GB 1.5Mb/s	✔	✘	$69 6mths	✔
DigiPlus	www.digiplus.com.au	$29.95† 10GB 256Kb/s	$42.95† 5GB 512Kb/s	$49.95† 10GB 512Kb/s	$89.95† 10GB 1.5Mb/s	✔	✘	$99 1mth	✔
Dodo ADSL	www.dodo.com.au	$29.90†* 1GB+^256Kb/s	$39.90†* 1GB+^1.5Mb/s	$79.90†* 20GB+^8Mb/s	$59.90†* 15GB+^1.5Mb/s	✔	$1.90	$99 6mths	✔
DragNet Budget ADSL	www.dragnet.com.au	$26.95* 200MB^256Kb/s	N/A	$69.95 10GB^512Kb/s	$95.95 10GB^1.5Mb/s	✔	✔	$100 6mths	✔
DragNet Power ADSL	www.dragnet.com.au	N/A	$54.95* 1.5GB 512Kb/s	$74.95 15GB 512Kb/s	$95.95 10GB 1.5Mb/s	✔	✔	$100 6mths	✔
Ecomtel ADSL	www.ecomtel.com.au	$24.90†* 300MB 256Kb/s	$54.90† No limit 512Kb/s	$54.90† No limit 512Kb/s	$69.90† No limit 1.5Mb/s	✔	✔	$120 1mth	✔
EFTel ADSL	http://w3.eftel.com	$29.95* 400MB^256Kb/s	$49.95† No limit 512Kb/s	$49.95† No limit 512Kb/s	$79.95† 40GB 1.5Mb/s	✔	$4	$125 1mth	✔
eTelecom ADSL	www.etelecom.com.au	$19.95†* 200MB 256Kb/s	$39.95†* 1GB 512Kb/s	$69.95†* 15GB 1.5Mb/s	$69.95†* 15GB 1.5Mb/s	✔	✔	$99 12mths	✔
Fonebox ADSL Broadband Internet	www.fonebox.com.au	$29.90* 200MB 256Kb/s	$49.90 5GB 512Kb/s	$79.90 30GB 512Kb/s	$79.90 10GB 1.5Mb/s	✔	✔	$99 6mths	✔
FutureWeb ADSL	www.futureweb.com.au	$31.95* 200MB 256Kb/s	$49.95 1.5GB 512Kb/s	$73.95 15GB 512Kb/s	N/A	✔	✔	$99 6mths	✔
Global Dial ZapDSL	www.globaldial.com	$29.95* 300MB 256Kb/s	$49.95 2GB 512Kb/s	$79.95 No limit 512Kb/s	$89.95 14GB+ 1.5Mb/s	✔	✔	$99 6mths	✔
Green Tree Frog ADSL	www.greentreefrog.net.au	N/A	$55 40GB 512Kb/s	$77 100GB 512Kb/s	$99 80GB 1.5Mb/s	✔	✔	$132 6mths	✔
Green Tree Frog Business ADSL	www.greentreefrog.net.au	N/A	$55* 40GB 512Kb/s	$77* 100GB 512Kb/s	$99* 80GB 1.5Mb/s	✔	✔	$132 6mths	✔

Regular broadband ISPs (1.5Mb/s or less)

Name	Online	Budget plan (under $35)	Light plan (under $60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under $80, at least 512Kb/s, minimum 10GB data limit)	High-speed plan (under $100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Hande Communications ADSL - Shaped	www.hande.net.au	$32.95 500MB^ 256Kb/s	$44.95 1.5GB^ 512Kb/s	$79.95 30GB^ 512Kb/s	$84.95 10GB^ 1.5Mb/s	✔	✔	$119.95 1mth	✔
Hande Communications ADSL - Usage Based	www.hande.net.au	$32.95* 500MB^ 256Kb/s	$44.95* 1.5GB^ 512Kb/s	$69.95* 15GB^ 1.5Mb/s	$89.95* 15GB^ 1.5Mb/s	✔	✔	$119.95 1mth	✔
HugoNet Home ADSL Broadband	www.hugonet.com.au	$29.95* 250MB+ 256Kb/s	$49.95* 1GB+ 512Kb/s	$69.95 25GB+ 512Kb/s	$79.95 20GB+ 1.5Mb/s	✔	✔	$99 12mths	✔
iiNet broadband1 ADSL	www.iinet.net.au	$29.95† 500MB+ 256Kb/s	$49.95 2GB 512Kb/s	$69.95 10GB 512Kb/s	$99.95 15GB 1.5Mb/s	✔	✔	$79.95 6mths	✔
ISP ADSL	www.isp.net.au	$29.70* 800MB 256Kb/s	$39.60* 5GB 512Kb/s	$77 No limit 512Kb/s	$69.30* 25GB 1.5Mb/s	✔	✔	$132 6mths	✔
Infinity Plus Residential DSL	www.infinityplus.net.au	N/A	$54.95† 25GB 512Kb/s	$54.95† 25GB 512Kb/s	$84.95† 30GB 1.5Mb/s	✔	✔	$100 6mths	✔
Instant Communications ADSL	www.in.com.au	$30* 200MB 256Kb/s	$52 5GB 512Kb/s	$73* 20GB 512Kb/s	$87* 10GB 1.5Mb/s	✔	✔	$99 6mths	✔
IntegrityNet ADSL	www.integritynet.com.au	$29.95* 200MB 256Kb/s	$59.95* 5GB 512Kb/s	$69.95* 10GB 512Kb/s	$99.95* 10GB 1.5Mb/s	✔	✔	$139 12mths	✔
Internode Home ADSL	www.internode.on.net	$29.95 500MB 256Kb/s	$39.95 8GB 512Kb/s	$69.95 40GB 512Kb/s	$49.95 10GB 1.5Mb/s	✔	✔	$129 6mths	✔
Internode SOHO ADSL	www.internode.on.net	N/A	$59.95 10GB 512Kb/s	$69.95 20GB 512Kb/s	$69.95 10GB 1.5Mb/s	✔	✔	$129 6mths	✔
Interwerks ADSL	www.interwerks.net.au	$34.95* 1GB 256Kb/s	$49.95* 5GB 512Kb/s	$79.95 No limit 512Kb/s	$99.95* 25GB 1.5Mb/s	✔	✔	$119 3mths	✔
iSage Internet ADSL	www.isage.aunz.net	$34.95 15GB 256Kb/s	$44.95 25GB 512Kb/s	$79.95 35GB 1.5Mb/s	$76.95† 15GB 8Mb/s	✔	✔	$99 6mths	✔
ispace ADSL	www.ispace.net.au	$29.95* 200MB 256Kb/s	$49.95 5GB 512Kb/s	$69.95 35GB 512Kb/s	$89.95 15GB 1.5Mb/s	✔	✔	$120 6mths	✔
iTEL ADSL	www.itel.net	$29.95* 200MB 256Kb/s	$45.95* 1GB 512Kb/s	$69.95 No limit 512Kb/s	$89.95* 10GB 1.5Mb/s	✔	✔	$129 12mths	✔
ADSL Broadband	www.itginternet.net.au	$31.79* 200MB 256Kb/s	$54.89 5GB 512Kb/s	$65.89 30GB 512Kb/s	$76.89 15GB 1.5Mb/s	✔	✔	$95 6mths	✔
JaziNET ADSL	www.jazi.net	N/A	$46.50 25GB 512Kb/s	$46.50 25GB 512Kb/s	$88 35GB 1.5Mb/s	✔	✔	$110 1mth	✔
Jump Internet ADSL	http://jumpnet.com.au	$30* 200MB 256Kb/s	$50* 2GB 512Kb/s	$80 30GB 512Kb/s	$80 15GB 1.5Mb/s	✔	✘	$0 12mths	✔
Koala ADSL	www.koalatelecom.com.au	$29.95† 500MB 256Kb/s	$39.95† 3GB 512Kb/s	$79.95† No limit 512Kb/s	$49.95† 10GB 1.5Mb/s	✔	✔	$129.95 6mths	✔
Lets Go ADSL	www.letsgo.com.au	N/A	$59.95 30GB 512Kb/s	$59.95 30GB 512Kb/s	$99.95 30GB 1.5Mb/s	✔	✔	$99 6mths	✔
Lizzy ADSL	www.lizzy.com.au	$16.95* 200MB 256Kb/s	$39.95 2GB 512Kb/s	$54.95 No limit 512Kb/s	$94.95 No limit 1.5Mb/s	✔	✔	$99 6mths	✔
Lucidity Communications ADSL	www.lucidity.net.au	N/A	$59.95† 25GB 512Kb/s	$79.95† 35GB 1.5Mb/s	$79.95† 35GB 1.5Mb/s	✔	✔	$120 1mth	✔
Midcoast Internet DSL	www.midcoast.com.au	$28.50* 200MB^ 256Kb/s	N/A	$71.50* 10GB^ 512Kb/s	$98* 10GB^ 1.5Mb/s	✔	✔	$99 6mths	✔
Netspace Home ADSL	www.netspace.net.au	$29.95* 300MB 256Kb/s	$29.95† 1GB+512Kb/s	$49.95† 25GB+ 512Kb/s	$69.95† 20GB+ 1.5Mb/s	✔	✔	$99 6mths	✔
Netspace SOHO ADSL	www.netspace.net.au	N/A	$49.95† 15GB 512Kb/s	$49.95† 15GB 512Kb/s	$89.95† 20GB 1.5Mb/s	✔	✔	$99 6mths	✔
NetSpeed ADSL	www.netspeed.com.au	$19.95†* 200MB 256Kb/s	$34†* 1GB+ 512Kb/s	$74† 30GB+ 512Kb/s	$74†* 10GB+ 1.5Mb/s	✔	$2	$139 12mths	✔
North Queensland Telecom ADSL	www.nqtelecom.com.au	N/A	$49.95 25GB 512Kb/s	$79.95 35GB 1.5Mb/s	$79.95 35GB 1.5Mb/s	✔	✔	$90 1mth	✔
Optraweb ADSL	www.optraweb.com.au	N/A	$44.95 5GB 512Kb/s	$74.95 60GB 512Kb/s	$81.95 15GB 1.5Mb/s	✔	✔	$129 6mths	✔
Optraweb Excess DSL	www.optraweb.com.au	$32.95* 2GB 256Kb/s	$39.95* 2GB 512Kb/s	$74.95* 60GB 512Kb/s	$81.95* 15GB 1.5Mb/s	✔	✔	$129 6mths	✔
Optraweb Bundle DSL	www.optraweb.com.au	$27.95† 2GB 256Kb/s	$34.95† 2GB 512Kb/s	$69.95† 60GB 512Kb/s	$80.95† 15GB 1.5Mb/s	✔	✔	$129 6mths	✔
OzForces Residential ADSL	www.ozforces.com	$24.95* 200MB256Kb/s	N/A	$68.95 25GB 512Kb/s	$89.95 35GB 1.5Mb/s	✔	✔	$119 6mths	✔
Pacific Internet DSL	www.pacific.net.au	$29.95* 250MB 256Kb/s	$39.95 1GB 512Kb/s	$54.95 No limit 512Kb/s	$69.95† 10GB 1.5Mb/s	✔	✔	$99 6mths	✔
Primus Flexible Broadband	www.primus.com.au	$24.95† 500MB 256Kb/s	$34.95† 1GB 512Kb/s	$69.95† 20GB 1.5Mb/s	$59.95† 12GB 1.5Mb/s	✔	✔	$118 1mth	✔
Quantum ADSL	www.quantumtelecom.com.au	N/A	$49.95† 25GB 512Kb/s	$79.95† 35GB 1.5Mb/s	$79.95† 35GB 1.5Mb/s	✔	✔	$140 1mth	✔
Rabbit Internet ADSL	http://rabbit.com.au	$27.95†* 200MB 256Kb/s	$34.90†* 1GB 512Kb/s	$57†* 30GB 512Kb/s	$71.41†* 10GB 1.5Mb/s	✔	✔	$99 6mths	✔
Rapid Net ADSL	www.rapidnet.com.au	$34.95 500MB 256Kb/s	$44.95 5GB 512Kb/s	$49.95 15GB 512Kb/s	$79.95 12GB 1.5Mb/s	✔	✔	$109 6mths	✔
REEDS.NET Internet Services	www.reeds.net.au	$29.95* 300MB 256Kb/s	$49 25GB 512Kb/s	$49 25GB 512Kb/s	$87 35GB 1.5Mb/s	✔	✔	$125 6mths	✔
Saco Technology ADSL	www.sacotech.com.au	N/A	$45.95† 2GB 512Kb/s	$75.95† 60GB 512Kb/s	$89.95† 15GB 1.5Mb/s	✔	✔	$129.95 6mths	✔
Simplicity ADSL	www.simplicity.com.au	$31 500MB 256Kb/s	$47 5GB 512Kb/s	$57 30GB 512Kb/s	$87 10GB 1.5Mb/s	✔	✔	$99 3mths	✔
SkyWays ADSL	www.skyways.net.au	$29.95† 200MB 256Kb/s	$49.95† No limit 512Kb/s	$49.95† No limit 512Kb/s	$99.95† 100GB 1.5Mb/s	✔	✔	$109 6mths	✔
Snowynet ADSL	www.snowy.net.au	$29.90* 200MB+ 256Kb/s	N/A	$69.90 No limit 512Kb/s	$99.90 No limit 1.5Mb/s	✔	✔	$110 6mths	✔
Southern Cross Telco ADSL	www.sctelco.com.au	$29.95† 400MB 256Kb/s	$39.95† 2GB 512Kb/s	$79.95† 30GB 1.5Mb/s	$79.95† 30GB 1.5Mb/s	✔	✔	$99 6mths	✔
Spin Internet	www.spin.net.au	$19.99* 200MB 256Kb/s	$39.99* 1GB+ 512Kb/s	$79.99 No limit 512Kb/s	$69.99* 15GB+ 1.5Mb/s	✔	✔	$99 6mths	✔
Supernerd SuperDSL	www.supernerd.com.au	$24.95* 500MB 256Kb/s	$44.95* 10GB 512Kb/s	$59.95 No limit 512Kb/s	$89.95* 30GB 1.5Mb/s	✔	✔	$110 6mths	✔
TalkTODAY ADSL	www.talktoday.com.au	$29.95†* 200MB^ 256Kb/s	$44.95†* 1GB^ 512Kb/s	$69.95† 40GB^ 512Kb/s	$74.95† 10GB^ 1.5Mb/s	✔	✘	$119 6mths	✔
TeeGee Internet ADSL	www.teegee.com.au	$24.95† 15GB 256Kb/s	$34.95† 25GB 512Kb/s	$69.95† No limit 512Kb/s	$64.95† 35GB 1.5Mb/s	✔	✔	$99 1mth	✔
telaustralia SME & Res	www.telaustralia.com.au	N/A	$49.95 25GB 512Kb/s	$79.95 35GB 1.5Mb/s	$79.95 35GB 1.5Mb/s	✔	✘	$120 6mths	✔
Telstra BigPond ADSL	www.bigpond.com	$29.95* 200MB^ 256Kb/s	N/A	$69.95† 12GB^ 1.5Mb/s	$69.95† 12GB^ 1.5Mb/s	✔	$2.50	$99 12mths	✔
Fat Free Broadband ADSL	www.fatfreefones.com	N/A	$49 25GB 512Kb/s	$49 25GB 512Kb/s	$89 35GB 1.5Mb/s	✔	✔	$110 1mth	✔
TrumpNet ADSL	www.trump.net.au	$29.95* 200MB 256Kb/s	N/A	$75.95 No limit 512Kb/s	$99.95 No limit 1.5Mb/s	✔	✔	$135 12mths	✔
TSN Broadband	www.tsninternet.com.au	$29.95 No limit 256Kb/s	$39.95 No limit 512Kb/s	$39.95 No limit 512Kb/s	$69.95 No limit 1.5Mb/s	✔	✔	$129 6mths	✔
Velocity Internet ADSL	www.velocitynet.com.au	$29.95* 300MB 256Kb/s	$49.50* 4GB 512Kb/s	$79.50* 50GB 512Kb/s	$89.50* 24GB 1.5Mb/s	✔	✔	$69 6mths	✔
Web Ace ADSL	www.webace.com.au	$19.95†* 200MB 256Kb/s	$39.95† 2GB 512Kb/s	$69.95 60GB 512Kb/s	$84.95 15GB 1.5Mb/s	✔	✔	$119 6mths	✔
Web-Hermits ADSL	www.web-hermits.com	$34.95 2GB 256Kb/s	$41.95 2GB 512Kb/s	$49.95 20GB 512Kb/s	$81.95 20GB 1.5Mb/s	✔	✘	$109 6mths	✔
Westnet Home ADSL	http://westnet.com.au	$29.95† 500MB 256Kb/s	$34.95† 1GB 512Kb/s	$54.95† 10GB+ 512Kb/s	$69.95† 10GB+ 1.5Mb/s	✔	$0.83	$99 6mths	✔
Wild IT DSL + Phone	www.wildit.net.au	$31.95† 15GB 256Kb/s	$39.95† 25GB 512Kb/s	$64.95† No limit 512Kb/s	$69.95† 35GB 1.5Mb/s	✔	✔	$98 1mth	✔
Wild IT Budget DSL + Phone	www.wildit.net.au	$28.95†* 5GB 256Kb/s	$34.95†* 10GB 512Kb/s	$64.95†* 20GB 1.5Mb/s	$64.95†* 20GB 1.5Mb/s	✔	✔	$138 1mth	✔
Winshop ADSL	www.winshop.com.au	$29.95 500MB 256Kb/s	$39.95 3GB 512Kb/s	$59.95 15GB 1.5Mb/s	$59.95 15GB 1.5Mb/s	✔	✔	$139 12mths	✔
Yaussie Net ADSL	www.yaussie.com.au	$31.95† 15GB 256Kb/s	$39.95† 25GB 512Kb/s	$64.95† No limit 512Kb/s	$69.95† 35GB 1.5Mb/s	✔	✔	$98 1mth	✔
yourhub ADSL	www.yourhub.com.au	N/A	$55 1.5GB 512Kb/s	$80 15GB 512Kb/s	$95 10GB 1.5Mb/s	✔	$1	$110 12mths	✔
ZCTS ADSL	www.zcts.net	N/A	$46.50 25GB 512Kb/s	$46.50 25GB 512Kb/s	$88 35GB 1.5Mb/s	✔	✔	$110 1mth	✔

*Key: * ISP charges excess usage fees when you exceed your download limit; † This price only available if bundled with long distance telephony from the ISP; + Additional download allowance available with this plan for use in off-peak periods; ^ ISP combines sent and received data when calculating usage. # Minimum BigPond Cable setup fee is based on 12-month contract with modem included. Telstra does not offer a BYO modem option.*

Vista's secrets EXPOSED!

New interface, new features and a wealth of hidden power — *Mary Branscombe* and *Simon Bisson* help you take control of Vista.

Key to compatibility: A All versions | H Home Premium | B Business | U Ultimate

Vista is a brand-new operating system with a brand-new UI and a brand-new way of doing things. This means that while many of the tools you're accustomed to using are still there — in many cases they're improved versions with more options — at the very least you have to look in a different place for them. There's a whole host of new ways for controlling Vista too; 3,000 settings in group policy nearly double the number of things you can change without delving into the registry.

As well as knowing how to change things, it's also important to know what's worth changing. We'll show you how to improve performance and security without having Vista irritate you, how to tweak the new interface, run problem applications and extend battery life — and what you need to do if things go wrong.

Improve performance

DETAILED SYSTEM DIAGNOSTICS

A Go to the control panel, choose Performance Information and Tasks > Advanced Tools to open a control panel full of tools to show you just how well your PC is working. The Reliability and Performance Monitor gives you access to current system performance, along with a detailed stability chart to show where and when failures occurred. This chart also shows what was installed and when, giving you more information to help diagnose the causes of any failures. An added function of this is to view system health reports.

You can create a new system health report from the Reliability and Performance Monitor. In the Advanced Tools control panel choose Generate a System Health Report. This takes 60 seconds, and leaves you with a detailed report on every aspect of your system, from performance to memory usage, via disk SMART information and network usage.

A FLASH DRIVE TO SPEED UP YOUR PC

A ReadyBoost uses flash memory to add an extra layer of disk cache to Windows Vista, which speeds systems up and reduces disk read/write requirements — as well as saving power. Implementing ReadyBoost is high on our list of recommendations for any Vista system. But you should note that not every USB 2.0 flash drive will work with ReadyBoost because many of them aren't fast enough. Look for a drive with high random access read/write speeds. Visit **www.grantgibson.co.uk/misc/readyboost** for a list of suitable drives.

Improve security

HIDE ADMIN ACCOUNTS

A If you share your PC with other people and you don't want the standard users to see your admin account name when they do something that means elevating to admin, tell Vista to show a blank tile — and send them away while you're using the dialog. The setting is there to speed things up on PCs joined to a domain, but it's useful on any shared PC. Type "gpedit.msc" into the Start Menu search field to load the Group Policy editor, then choose Local Computer Policy > Computer Configuration > Administrative Templates > Windows Components > Credential User Interface and set Enumerate administrator accounts on elevation to Disabled.

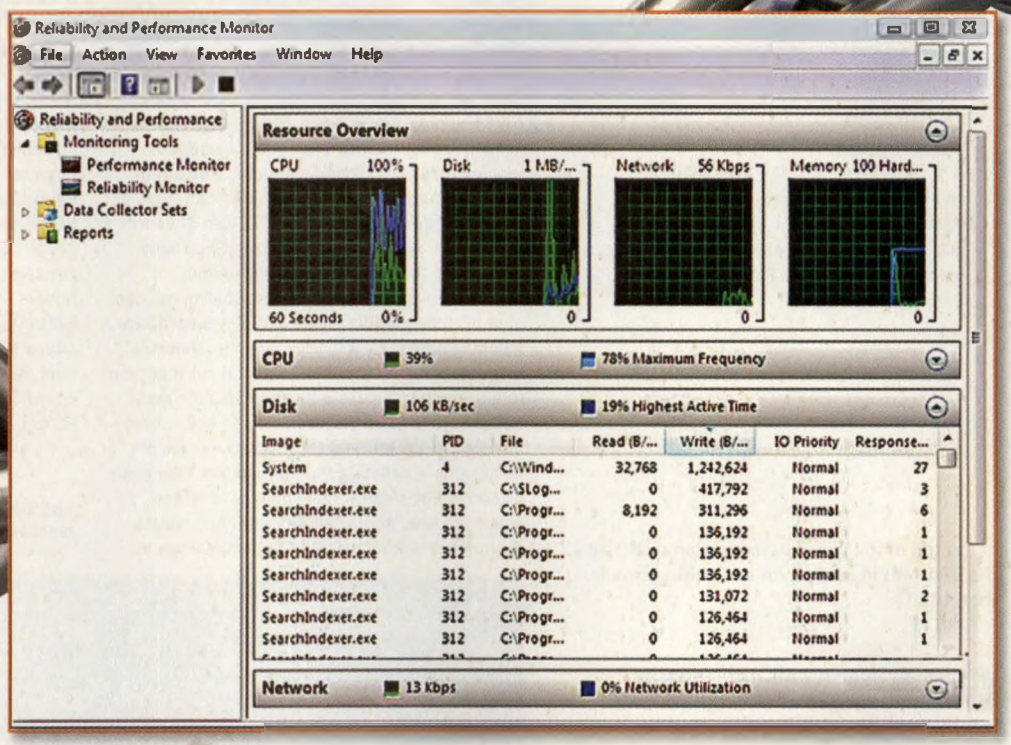
BLOCK USB DEVICES

A If other people have access to your PC you can stop them installing new USB devices in Group Policy > Computer Configuration > Administrative Templates > System > Device Installation > Device Install

FACT FILE

You can use Shift + right-click to open a command prompt in remote disks or folders. Vista temporarily creates a network drive mapping, so the command prompt can run commands in that folder without errors.

Vista's new Performance Monitor helps you track if your PC is slowing down or where you need to upgrade.


Reliability and Performance Monitor
File Action View Favorites Window Help
Reliability and Performance
Monitoring Tools
Performance Monitor
Reliability Monitor
Data Collector Sets
Reports
Resource Overview
CPU 100%
Disk 1 MB/...
Network 56 Kbps
Memory 100 Hard...
60 Seconds 0%
CPU 39% 78% Maximum Frequency
Disk 106 KB/sec 19% Highest Active Time
Image PID File Read (B/... Write (B/... IO Priority Response...
System 4 C:\Wind... 32,768 1,242,624 Normal 27
SearchIndexer.exe 312 C:\Prog... 0 417,792 Normal 3
SearchIndexer.exe 312 C:\Progr... 8,192 311,296 Normal 6
SearchIndexer.exe 312 C:\Progr... 0 136,192 Normal 1
SearchIndexer.exe 312 C:\Progr... 0 136,192 Normal 1
SearchIndexer.exe 312 C:\Progr... 0 136,192 Normal 1
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SearchIndexer.exe 312 C:\Progr... 0 126,464 Normal 1
SearchIndexer.exe 312 C:\Progr... 0 126,464 Normal 1
Network 13 Kbps 0% Network Utilization

Restrictions. Enable "Prevent installation of devices not described by other policy" to block new devices, then use the two "Display a custom error message" policies to put in an explanation of why things won't install, so that other users aren't confused. You'll need to look up the hardware IDs of devices you want to allow on the Details tab of the Property pane in Device Manager. Enable "Allow administrators to override Device Installation Restriction policies" so you can install hardware yourself. If you just want to stop people copying files, look under System > Removable Storage Access and disable write access for CD drives, removable disks, MP3 players (WPD devices) and so on; this won't stop ReadyBoost from working because the system still has rights, but no-one can copy off your confidential files.

UNDERSTAND ADMIN

XP has a default administrator account that's hidden as soon as you create your own, so it's more likely to be working if your own account has problems. On a fresh installation of Vista this account is disabled; if you upgrade from XP and the default account is the only admin account it will still be available. You won't be able to use it to get into Safe Mode if there are any other admin accounts. If you want the account there as a backup — and you're prepared for the consequences if someone gets hold of your PC — open the Computer Management panel, choose System Tools > Local Users and Groups > Users, right-click on the Administrator account, choose "Properties" and untick "Account is disabled".

YOU'LL NEED TO GET USED TO HOLDING DOWN THE SHIFT KEY WHEN YOU CLICK ON FILES IN EXPLORER

MANAGE UAC

User Account Control prompts can be irritating when you first start using Vista, but it's not a good idea to turn them off completely; for one thing, that stops Internet Explorer 7 from running in its most protected mode. Instead, use the Local Security Policy console (SECPOL.MSC) to reduce the number of prompts you see. Run SECPOL.MSC, then choose Local Policies > Security Options and scroll down to the UAC options; right-click on and choose "Properties" for each one. Set "Behavior of the elevation prompt for administrators" to "Prompt for consent" and you don't have to type in your password; make it Elevate without prompting and you'll have some protection, but you won't see a prompt when something switches to running as admin. Leave the behaviour for standard users on "Prompt for credentials" or they won't be able to run anything as admin. "Elevate on application installs" needs to be set to Enable or you can't install software. "Run all users, including administrators, as standard users" is where you would turn UAC off if you didn't want any protection: we wouldn't recommend it. Unless you're in a large company with its own applications, don't enable "Validate signatures of executables that require elevation". Leave "Virtualize file and Registry write failures to per-user locations" enabled so that games that want access to Program Files and the registry can still run in a standard user account.

Tweak the interface

MULTIPLE SELECT IN EXPLORER

If you use Ctrl+click to select a lot of files in Explorer and your finger slips into another window, you lose everything you've selected. Click on "Organize" and choose Folder and Search Options > View > Use check boxes, and when you hover over a file or folder you'll get a checkbox that you can tick to select it. You can leave a selection active for as long as you want, even if you switch to another window. With checkboxes enabled you also get a checkbox on the sort and filter drop-downs

Vista's secrets EXPOSED!

CONTROL WITH POWERSHELL

Although PowerShell was dropped as an official Vista feature, go to *http://snipurl.com/1717l* and you can download a copy to control services, applications, registry keys, utilities like BitLocker and many other features directly from the command line. Think of PowerShell as an object-oriented command shell; retrieve information from one program – or any .NET object – and send it to another. Get a list of all the services running that were started manually, stop any of them that begin with Z, find out how many files of a specific file type are on your PC, turn BitLocker and UAC on and off quickly – PowerShell does much more than the usual command line.

With PowerShell's application control you can open Windows Media Player and play a particular album or upload files to your web site, time how long it takes and have Windows read out that time to tell you the transfer is finished. Usually you would have to learn Visual Basic and write code, but PowerShell lets you choose between simple commands – called "cdmlets" because they each do something small – that you type in on the command line. Writing scripts with the cmdlets is more like writing a batch file than a program.

It's also a calculator, for dates as well as numbers. You can create a transcript to try out a few commands and copy the ones that do what you want into a batch file. You can even use the -whatif flag to check what your command will do before you run it.

When Microsoft says a tool is extensible, it usually means a developer with a lot of time can do something with it. But there are already some impressive add-ons for PowerShell like PowerGadgets (*www.powergadgets.com*), which turns information from PowerShell into charts, gauges and maps ready to view in the Sidebar. You can create a chart of file types in different folders with a line of script – rather than by writing pages of code – to see if a directory is crammed with TEMP files or just a load of photos. With NetCmdlets (*www.nsoftware.com/powershell*) you can run a program on a remote PC or configure your router from PowerShell.

List the services starting with "win" and discover other services depending on them.

```
PS C:\demo> Get-Service win*

Status     Name                      DisplayNa
------     ----                      ---------
Running    WinDefend                 Windows D
Running    WinHttpAutoProx...        WinHTTP W
Running    Winmgmt                   Windows M
Stopped    WinRM                     Windows R

PS C:\demo> Get-Service win* | format

DisplayName                : Windows Defender
```

FACT FILE

Check what UAC will let you do by typing "WHOAMI /ALL" at a command prompt. You'll see your SID, what groups you're in, what they allow and which privileges are enabled (you may be able to shut down the PC but not change time zones).

at the top of the window so you can select all the .JPG files in a folder, or everything smaller than 10KB.

ADD NEW GADGETS

Vista's Sidebar is Microsoft's answer to tools like Yahoo! Desktop Widgets. It comes pre-populated with a set of basic gadgets, simple applications that are used for information delivery. You'll find plenty more gadgets in the Windows Live Gallery at **http://gallery.live.com**; simply download and install to use.

Gadgets don't have to sit in the sidebar though; you can drag them onto the desktop. Many gadgets will take advantage of the extra real estate, and expand to a larger view. Some will add extra information that isn't displayed when hosted in the sidebar.

Gadgets are built using web development techniques, and Microsoft provides tools and an SDK to help you start work on your own if you so fancy. Go to **http://microsoftgadgets.com** to find out more.

ENHANCED EXPLORER MENUS

To get the most out of Vista, you'll need to get used to holding down the [Shift] key every time you right-click on a file or folder icon in Explorer, or in the Start Menu. You may find this awkward to start with but it will add new commands to Vista's context menus. You'll be able to add any application to the Start menu or the Quick Launch toolbar, as well as being able to copy the path to a file or folder. Folders get an additional option allowing you to open a command window in the folder.

CUSTOM DPI

H B U High-definition LCD monitors are increasingly common, and Vista's standard 96dpi display can mean working with tiny icons and window text. You can use the Adjust font size tool that lives in the Personalization control panel to switch to 120dpi, or you can choose a custom dpi to suit your monitor uses by using your mouse to change the scale of a ruler on screen. Turn off XP-style scaling to take advantage of Vista's resolution-independent icons.

> YOU CAN USE THE HYBRID SLEEP TO SWITCH FROM SLEEP TO HIBERNATE AFTER A SET AMOUNT OF TIME

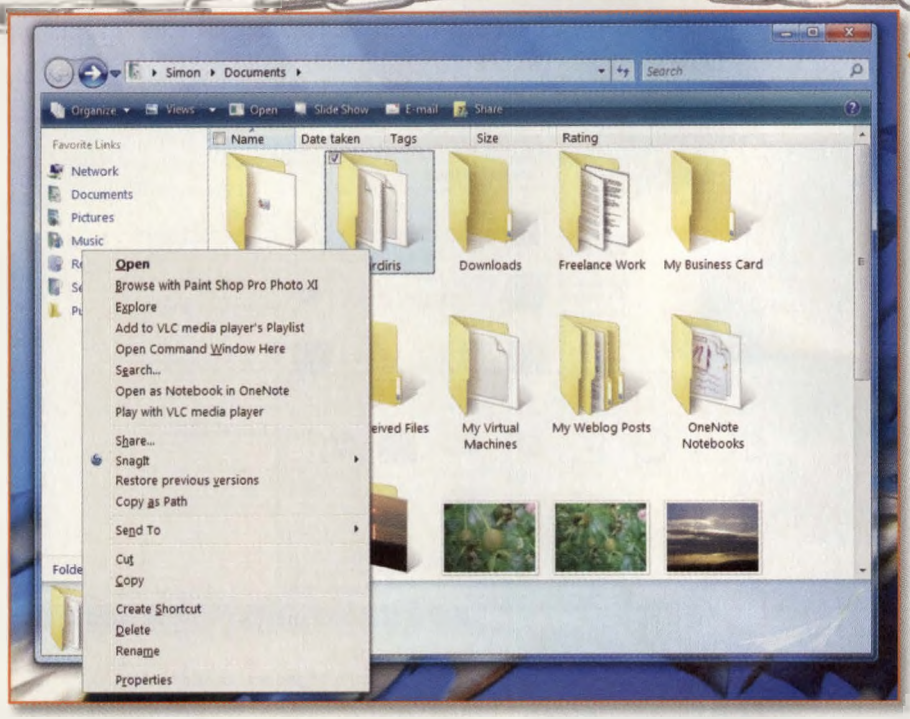
Tweak search

TUNE START SEARCH

When you search in the Start menu you can tell Vista whether you know that you're looking for the name of a file or something inside the file — use "name:keyword" to get matching file names and "content:keyword" to get matching files. You can also use "kind:" to limit the filetypes — kind:email, kind:docs, kind:pics, kind:music and so on: this method is similar to XP's Windows Desktop Search syntax.

SEARCH MORE FROM START

For security purposes, the Start menu only searches programs, control panel items and personal folders; a limited user could create a malicious file with the name of



Hold down the Shift key as you right-click in Explorer to get extended context menus with extra options.

something you're expecting to find and you would run it from the search results by hitting Enter. But if you're familiar enough with your system to know which files may cause problems, you can either click "See all results" — which reads Search Everywhere when there are no results — or change the search scope. You can right-click on the Start menu and choose Properties > Customize and change "Search files" to "Search entire index".

Better files and storage management

SHARE INDIVIDUAL FILES

Instead of sharing a whole folder you can now share individual documents, which means you don't need to move other files to another folder to keep them hidden. Right-click on a file and choose "Share..." then pick which accounts you want to share with and whether they can read or edit the file. This only works for files and folders in a user's personal folder tree (C:\Users\Mary\Documents for example), but it won't work for the user's top-level folder (C:\Users\Mary) or for files in other folders where you have to use XP-style sharing at the folder level. If you want to use password-protected sharing you need to give people who access files over a network accounts on your PC as well. The Shared By Me saved search lists files that you're sharing out.

RETRIEVE OLDER FILES

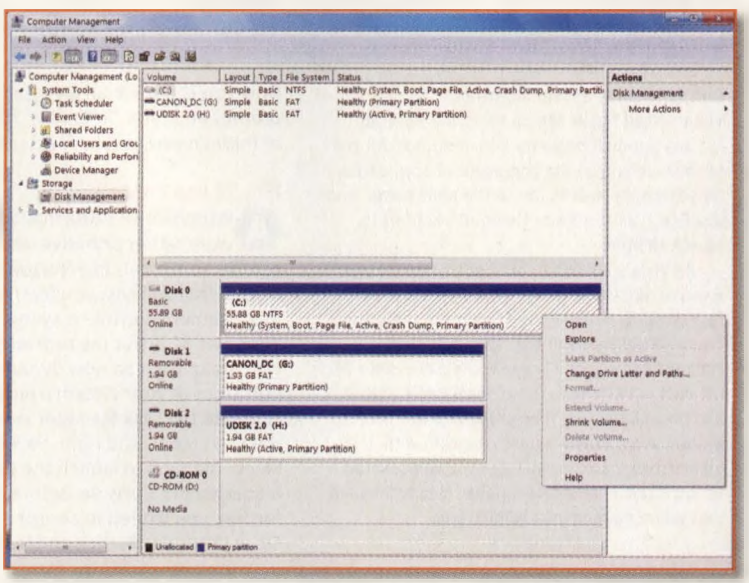
Vista keeps two kinds of file backups: ones that are created during a System Restore, and ones that are created when you run Backup. Right-click on a chosen file and choose "Restore previous versions" and you will get a list of both, but if you're trying to restore from a backup then you'll need the media that you saved it on (such as a CD, DVD or flash drive) to get the file back. If you need to restore a file that you've deleted rather than changed, then right-click in a blank area in the folder it used to reside in and choose Properties > Previous Versions. Here you'll see snapshots of the folder at various times during its existence; click "Open" and drag the file you want out — restoring the whole folder might delete or roll back other files.

TRACK SYSTEM RESTORE SPACE

If you turn System Restore on when you install Vista, the feature will probably grab 15 per cent of the volume it's running on; if you don't turn it on for a while it will take 30 per cent of your free space. You can resize it, but you should check how much it's actually using by typing "VSSADMIN LIST SHADOWSTORAGE" at an admin command prompt. Use "VSSADMIN LIST SHADOWS" to see what shadow copy files have been saved — what you'll see will be a long list, but it may not take up much space. The first Complete PC Backup image you take is stored as a .VHD file so only incremental changes will be seen in the System Restore space. If it's really taking too much space, you should use "VSSADMIN RESIZE SHADOWSTORAGE" to set the new limit.

Add an extra layer of disk cache to Vista using ReadyBoost and some flash memory, from a fast USB 2.0 stick.

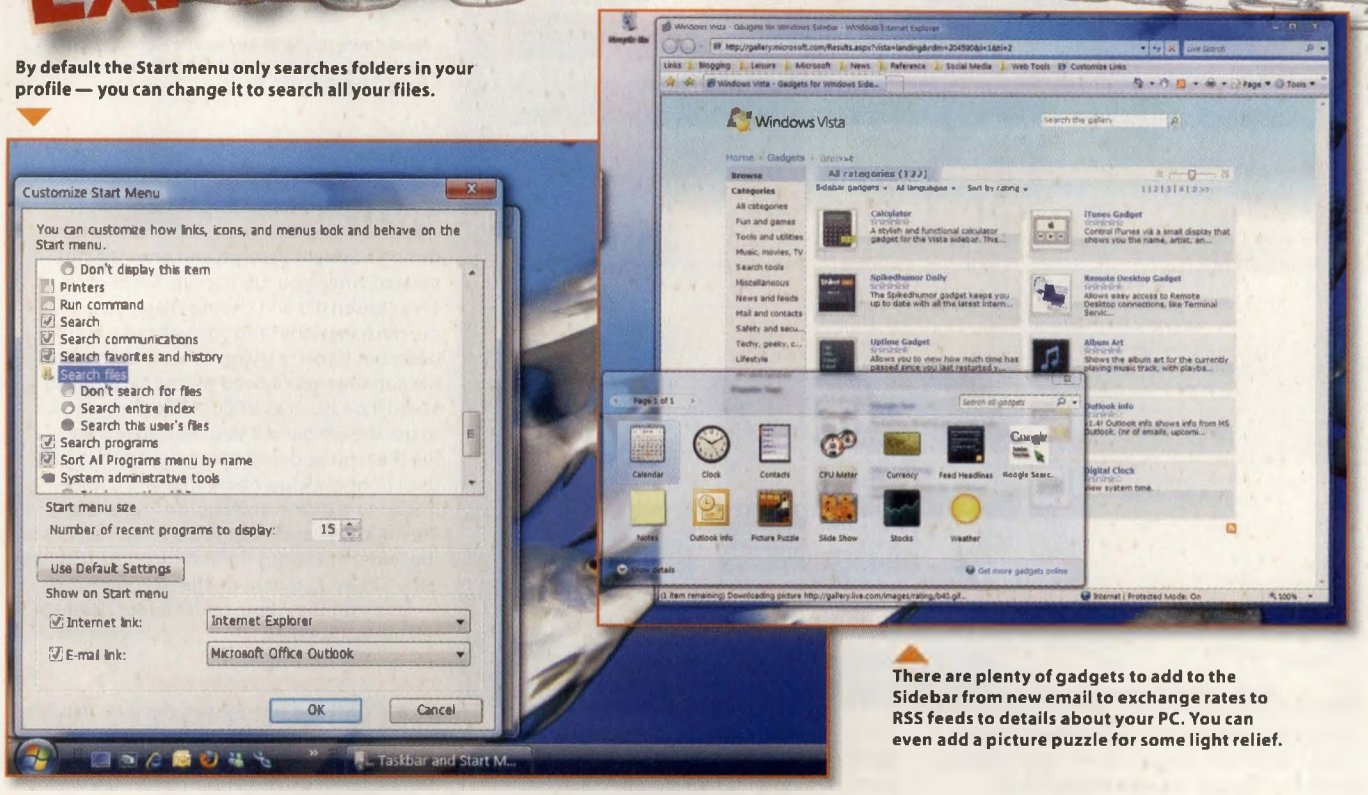
You can change the size of drive partitions straight from Vista's Disk Management console. Shrink or extend any partition — even the system partition.



FACT FILE

Press Alt in any Explorer window to have the old menus pop up like File, Edit and View. If you know the Alt keyboard shortcuts for what you want to do, your fingers can still do the work.

Vista's secrets EXPOSED!



By default the Start menu only searches folders in your profile — you can change it to search all your files.

There are plenty of gadgets to add to the Sidebar from new email to exchange rates to RSS feeds to details about your PC. You can even add a picture puzzle for some light relief.

HANDY TOOLS

Use the Tablet snipping tools:
Previously available only for Tablet PCs as part of the Experience Pack, the snipping tool works just as well with a mouse. The first time you run it (Start Menu > Accessories > Snipping tool), Vista offers to put it on the Quick Launch bar, which keeps it handy – or you can type SNIP into the Start menu if you prefer. Instead of just copying text or an image you get a screen grab of exactly what you're interested in; you can select the whole screen, a window, a rectangular area or a freeform snip, highlight areas or scribble annotations and save, copy or email the clip.

Run commands as administrator:
Vista's Start Menu search tools can help you run any application as an administrator. All you need to do is type the command or application name into the search box in the start menu, and use Ctrl + Shift + Enter (instead of Enter) to launch the file.

As Vista's command prompt title bar shows, if you're running as administrator, it's a good test. Start by opening the Start menu, and type "cmd" into the search box. Vista will find cmd.exe and select it – you'll see a checkbox by the icon in the results. Hold down Ctrl + Shift and press Enter. You'll be presented with a UAC dialog, to allow you to run cmd with administrator privileges. Once you've accepted it, you'll see a command window, clearly labelled that you're running as administrator.

TAKE FILE OWNERSHIP

If you've ever created a new account on your system — or moved Windows to a new hard drive — and ended up with files that you can't access or delete, the TAKEOWN and ICACLS utilities in Vista let you reset the permissions and access controls without having to trawl through dialog boxes. Create a batch file with these lines in and call it "RECLAIM.CMD". You can do this by entering the following code:

```
TAKEOWN /f %1 /r /d y
ICACLS %1 /grant administrators:F /t
```

Now you can open an elevated command prompt and type "RECLAIM" followed by a file or folder name to take file ownership again.

RESIZE PARTITIONS

Windows XP's disk management tools were rather primitive, especially when compared to tools like Norton Partition Magic (that will cost you $93). Vista's Disk Management console may look similar to Windows XP's, but the tool adds new features that mean you can now dynamically resize the partitions in your system from within Windows. To get to the Disk Management console, open the Start Menu and right-click on Computer. Select Manage to launch the Computer Management Console. Before you can go any further, you'll need to accept a UAC dialog. Once that's done, click on Storage and then choose Disk Management. Now right-click on your chosen partition and use the Shrink and Extend options to alter partition size.

MOUNT BACKUPS AS DATA VOLUMES

Vista's backup tool (Start Menu > Maintenance > Backup and Restore Centre) creates VHD files — the same format that's used by Microsoft's Virtual Server and Virtual PC for virtual machine images. While you can't boot a Vista backup file in Virtual PC, you can use the vhdmount tool in Virtual Server 2005 R2 SP1 to access — and modify — the files in a Vista backup. Virtual Server is a free download at **www.tinyurl.com/eaq4m**. Create your Vista backup file, and then use "VHDMOUNT /p" to mount the VHD file as a drive, with full read/write access.

Extend battery life

CHANGE START MENU SHUTDOWN

In Control Panel > Power Options, choose "Change plan setting" for a profile and click "Change advanced settings" to change the behaviour of the power button icon on the Start menu, go to "Power Buttons and Lid" > Start Menu power button. You can switch between Shut Down, Hibernate and the default Sleep (on newer PCs it will be the new Hybrid Sleep mode). You must set the icon behaviour for each separate power profile you have.

CUSTOMISE YOUR POWER PROFILES

Windows Vista has many more power options than XP, so it's well worth tuning

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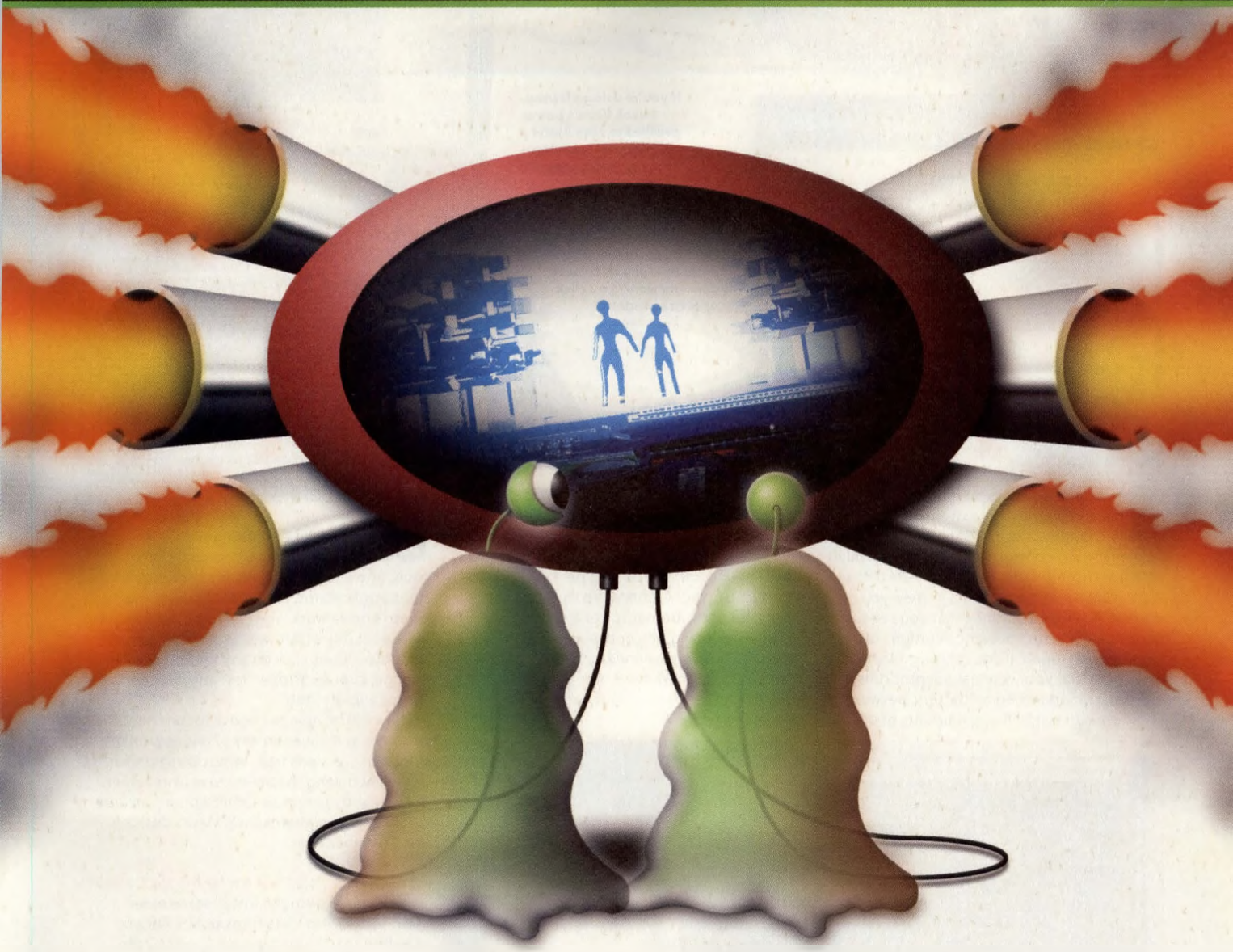

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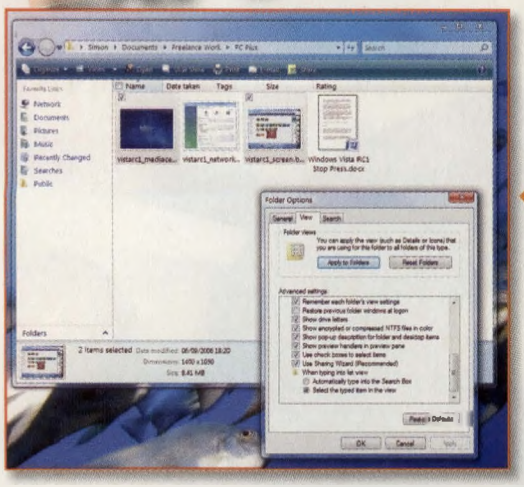
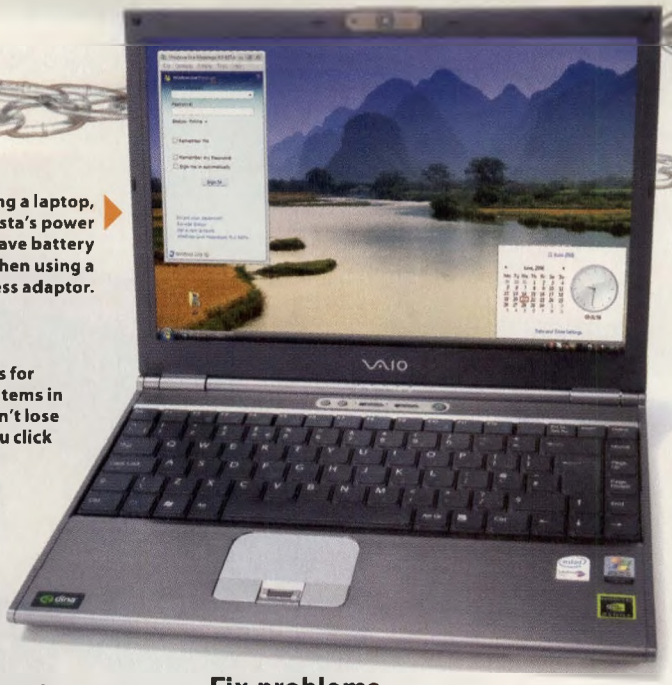


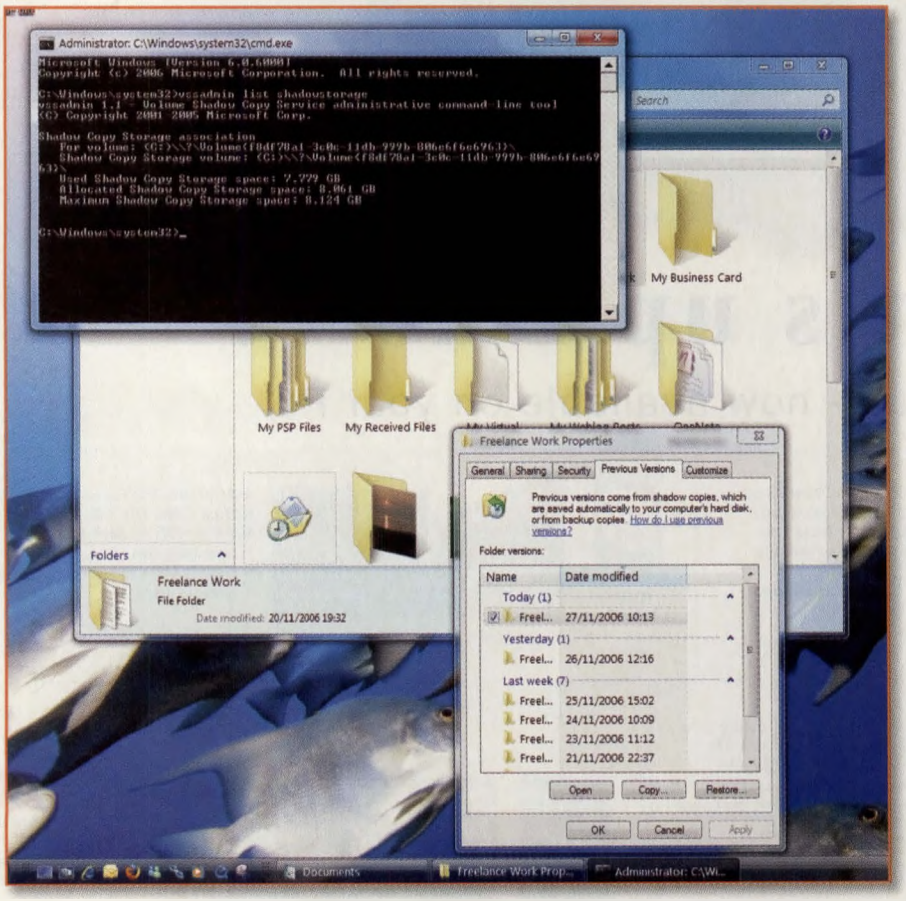


If you're using a laptop, tweak Vista's power profiles to save battery power when using a wireless adaptor.

Turn on checkboxes for selecting multiple items in Explorer — you won't lose your selection if you click out of the window.

the three basic power profiles to fit your machine and your usage patterns. You can start by changing the existing plans in the Power Options control panel, or you can build your own from scratch (select "Create a Power Plan" from the left sidebar). It's when you get into the Advanced Settings that you see just how much of Vista's power operations can be tweaked and tuned. If you're using a laptop, make sure that your wireless adaptor runs in a low power mode when on battery, because Wi-Fi can consume significant amounts of power.

You won't get as good a performance, but you should eke a few more minutes out of your battery. Newer PCs can take advantage of Vista's Hybrid Sleep mode. If you often leave your computer in long periods of sleep, you can use the Hybrid Sleep to switch from sleep to hibernate after a set amount of time, reducing power consumption. Get even more power savings by setting system tasks in Task Scheduler — like the scheduled disk defrag — to run only when a notebook has mains power.



Fix problems

TWEAK APPLICATION COMPATIBILITY

Vista's wide beta program gave it plenty of application compatibility tools, and it can automatically configure most applications. However, if something doesn't quite work, you can force Vista to run an executable as if it was an older version of Windows. Right-click on any file you want to change, choose "Properties" and click on the "Compatibility" tab.

You will be able to choose to run the program as if it was on any 32-bit version of Windows (versions from Windows 95 onwards), as well as having the ability to restrict screen colours and resolution. Other options include disabling visual themes and Vista's desktop windows manager.

RUN AS ADMINISTRATOR TO INSTALL MSIS

If you're trying to install some older software in Vista from an MSI file, you may find that it won't install. As an MSI file isn't an executable, you'll need to run a command shell as administrator and then launch the MSI file from the command line. This will run the Windows Installer with administrative privileges — and your application should install happily.

TURN IT DOWN

Some applications have loud alerts — with the volume up high enough so you can enjoy music, you'll be near deafened by the sound you hear when you copy something in Excel with Thornsoft's ClipMate clipboard management utility turned on. In order to fix this, right-click on the volume control and open the Volume Mixer to choose the volume for individual applications — or to mute one application rather than everything on your PC. You'll only see the applications that are currently playing a sound (or those that have recently finished), which means that you can turn the volume down on a noisy app when you hear it — but not on every application on your PC. APC

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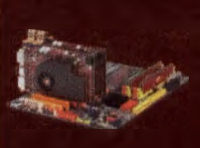

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Hybrid hard drives

This new breed of hard drive will boot faster and use less notebook battery power under Vista. *Ashton Mills* gets under the hood.

If there's one component of the PC subsystem that always gets a bad rap, it's the humble hard drive. While Moore's Law has seen incredible advances in CPU, GPU and memory technologies, the hard drive has been left behind. Oh, granted, they've got increasingly *fatter*, storing stupidly large amounts of data, and performance has increased a tad with 10,000rpm drives and 16MB onboard caches, but the economies of scale to the aforementioned PC components by comparison is anorexic. Hard drives are still the bottleneck.

Now, new hybrid drives are being supported by Vista that promise breakthroughs in the speed and efficiency of drives. NVRAM is regularly improving and becoming more economical to produce, and, partly as a result, hybrid hard drives have hit the scene that somewhat bridge the gap and combine the best of both worlds.

NON-VOLATILE MEMORY

Hybrid hard drives, as the name suggests, are essentially a hard drive with onboard NVRAM to act as fast, permanent, storage. It's just like your faithful magnetic disks, only a heck of a lot faster (being memory), and much much smaller.

But as that most popular adage goes — it's not how big it is, it's how you use it. While the average for hybrid drives at the moment is only a tiny 256MB of onboard NVRAM, this allows for some pretty smart cache management tricks to save power, increase performance and speed up boot times.

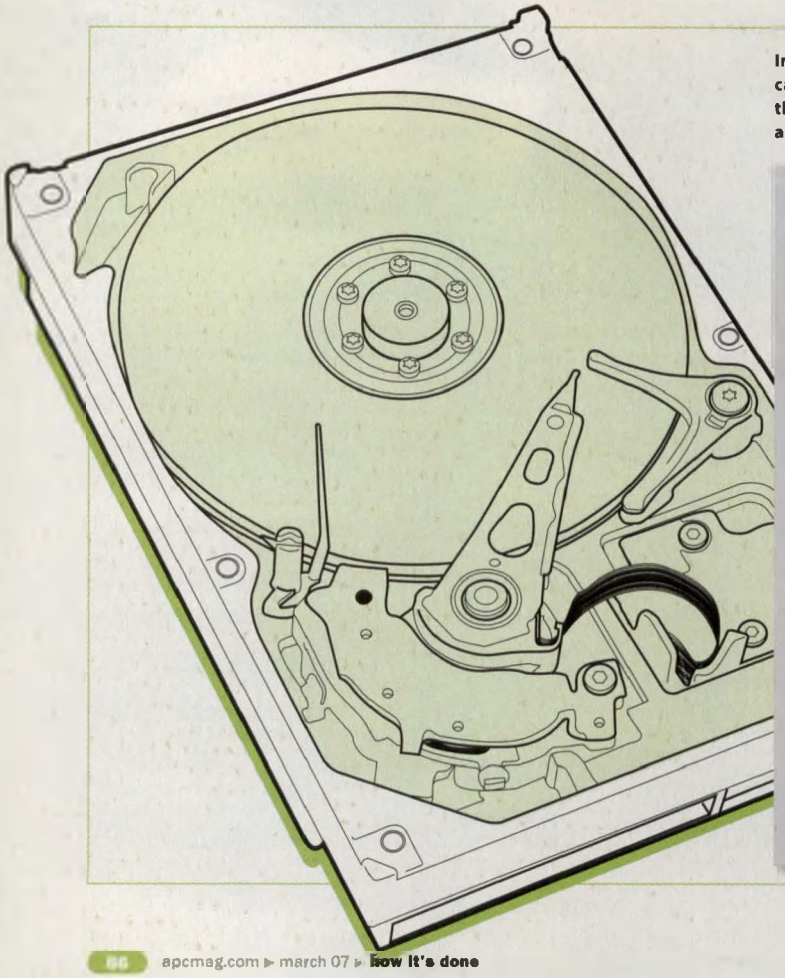
WHAT CAN THEY DO FOR ME?

Primarily, hybrid drives are aimed at the mobile market — where power can be a rare commodity. In fact, when it comes to notebooks, hard drives are one of the primary gas guzzlers.

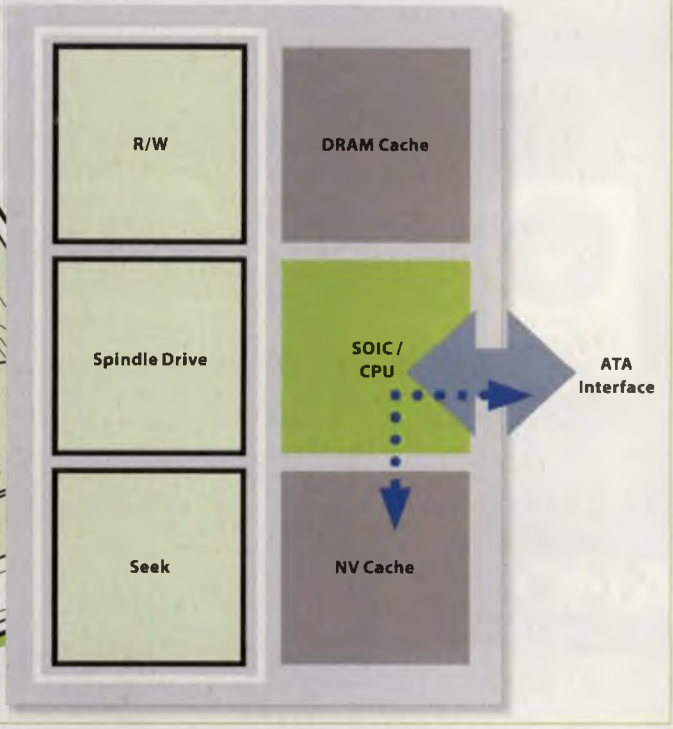
The key advantage of being able to write or read from NVRAM is that the drive itself doesn't need to spin up if all the data that's needed is in the NV cache, and as it's non-volatile, it persists even if the system is powered down. You could actually save your word document and close the laptop without the drive being spun up.

For this reason, hybrids allow new types of aggressive power saving for hard drives, where parts of the drive can be mapped to the cache, and the contents are read or written to from there while the drive itself is powered down, thereby saving battery power. Then, when the cache is full, or more data is needed that doesn't exist in the cache, the drive is powered up again, but since users can generally remain in the one application for hours at a time (and the volumes of data being saved are usually well within the size of the cache, for most office applications), there can be significant power savings from drives that are spun down while the user works.

Of course, it's a matter of finding a balance, as starting a hard drive spindle consumes far more power than keeping one running, not to mention the NVRAM itself has a power draw. So, while there are benefits to using an NV cache, there



In addition to the DRAM cache, hybrid drives include onboard NVRAM that can both cache and permanently store read and writes without spinning up the drive. The drive's controller manages the DRAM cache and the NV cache, and ensures consistency between the NVRAM and the magnetic media.



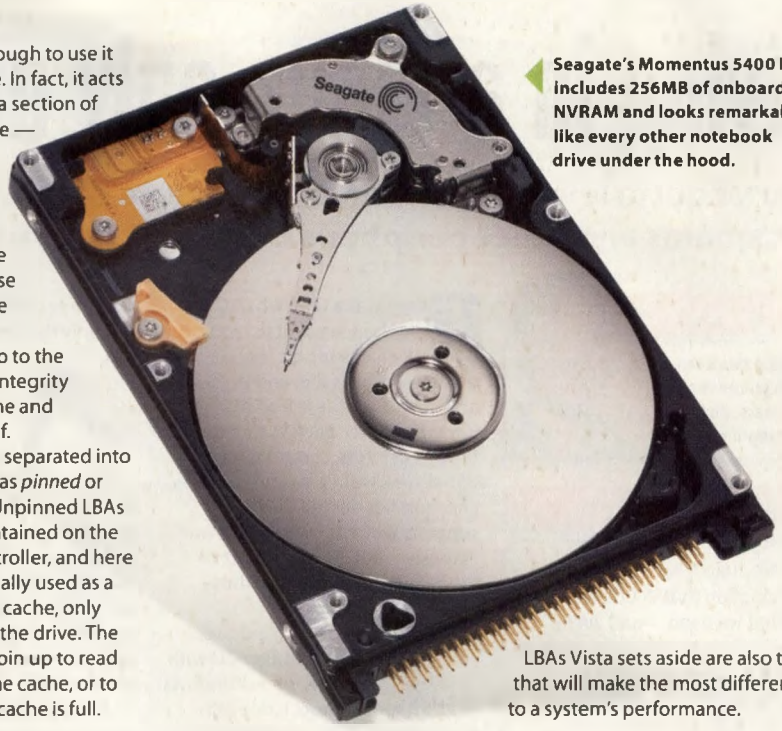
is a science in the management of it to ensure maximum performance at minimum power draw in tandem with the drive itself.

The other key benefits of reading and writing from NVRAM are that the hibernation file, and bootup files, can be permanently mapped to the cache, thereby allowing the machine to resume or boot up directly from the NVRAM, which is leagues faster than even the fastest hard drives today.

While the theory goes that hybrid drives would be great for all sorts of service, including desktops and servers, the large volumes of data these systems deal with doesn't make them entirely practical — at least for now. As soon as hybrid drives start approaching the 1GB or more of onboard NVRAM, desktops could see some very real benefits too in terms of performance, and power savings to boot. But until then, it's the mobile market that benefits most.

small size, it's not enough to use it as just another cache. In fact, it acts more like a mirror of a section of the drive than a cache — the NVRAM will usually be assigned to store the content of set LBAs (Logical Block Addressing, the system hard drives use to map their available space) by the drive's controller. It's then up to the controller to ensure integrity between the NV cache and magnetic media itself.

Mapped LBAs are separated into either what's known as *pinned* or *unpinned* data sets. Unpinned LBAs are created and maintained on the fly by the drive's controller, and here the NVRAM is essentially used as a buffer like the DRAM cache, only without spinning up the drive. The drive only needs to spin up to read data not already in the cache, or to write data when the cache is full.



Seagate's Momentus 5400 PSD includes 256MB of onboard NVRAM and looks remarkably like every other notebook drive under the hood.

LBAs Vista sets aside are also those that will make the most difference to a system's performance.

OF COURSE, IT'S A MATTER OF BALANCE: STARTING A HARD DRIVE SPINDLE CONSUMES FAR MORE POWER THAN KEEPING ONE RUNNING

UNDER THE HOOD

Aesthetically, hybrid drives are identical to your standard hard drive. The changes all take place under the hood, with the addition of NVRAM chips and updates to the drive's controller — this is in order to handle the new memory (and to accept a new set of ATA commands, which are currently being standardised).

The key to hybrid drives is how the NVRAM is put to use. Given its

This means that, for small file writes and reads, the drive can remain idle and data can be written to and fetched from the NV cache, which is must faster than the drive (and thus increases performance while also saving power).

Pinned LBAs are where it gets kinda cool. Here it's up to the operating system to define set LBAs that should always be present in the NVRAM. In the case of Vista's hybrid drive support, this means storing copies of files related to bootup and hibernation, so that a system can resume from a hibernation (or cold boot) entirely from the NVRAM. (Which is insanely fast.)

Pinned LBAs and unpinned LBAs are mutually exclusive, and unpinned LBAs can only use whatever remaining space isn't used by pinned LBAs. Generally, depending on the data Vista caches, this may not leave a lot of room for unpinned LBAs, but, in general, the

HYBRID DRIVES TODAY

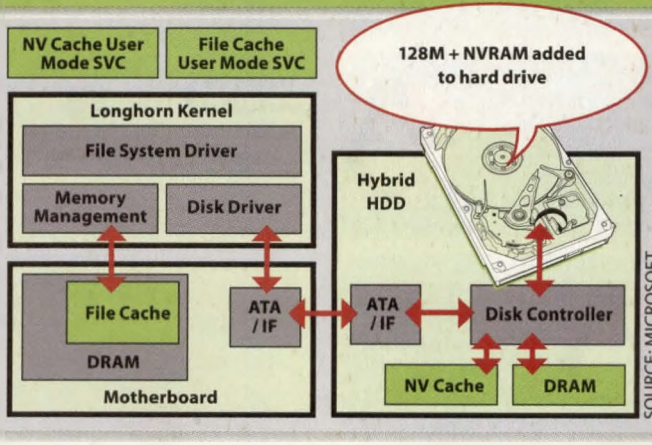
Hybrid drives are so new a technology that there aren't many on the market at the moment. Samsung and Seagate both have drives with 256MB of onboard NVRAM, and more are expected to follow. Again, also, while the current products sport 256MB, the potential is there for 1GB or more; it all comes down to cost. Naturally also, there will be a rule of diminishing returns where you just don't need anymore NVRAM for a given set of tasks and operational scenarios of a machine. But, hopefully, by that time ,NVRAM will be so cheap we'll be able to switch completely to solid state drives — and wave goodbye to the magnetic platters forever.

ROBSON AND READY DRIVE

Ready Drive is actually the name that is given to the Vista support of hybrid drives that we've already discussed — for which the block diagram to the left goes into more specific detail.

Notice the NV cache, and the addition of a specialised driver to manage it in Vista. This is necessary to create pinned LBAs for the NV cache, but, without it the hybrid drive can still use the NV cache for unpinned entries (and allow the drive to spin-down in times when little data is being transferred).

Robson is a very similar initiative from Intel to use NVRAM the way hybrid drives do, but not attached directly to a drive. Instead, Intel proposes the memory could be pre-installed on a motherboard — or come as a PCI-E card. In Robson, as with Vista, a driver manages the use of the NVRAM to boost boot times, allow fast saves and reads for commonly accessed files, and to save power and allow drives to power down. Intel has already demonstrated Robson at last year's IDF.



Living in a Linux-only universe, part 6

You've gotta love the plug-and-play nature of USB devices, especially when it comes to cameras and other peripherals. But can Ubuntu make it as easy as Windows?

ASHTON MILLS

Ashton has been a tech journo for over 12 years, including five years with *APC*.

THE RATINGS

In this project we're making the assumption that Windows does all that we need – and we're seeing if Linux and open source software measures up. Perhaps that's not an entirely fair place to sit; however, as the de facto in operating systems for which everyone is familiar, it's our best basis for comparison. So here's how we'll rate the experience of going Windows-free:

OPTIMAL
Passes with flying colours. The task could not only be completed, but better or easier than under Windows.

PASS
No problems. The task can be completed exactly as under Windows.

IFFY
When a task could only be partially completed or completed but not without issue.

FLOP
Not possible to complete at all. (Probably not a good thing.)

There was a time when USB didn't mean a lot to Linux. It actually had support for USB long before Windows did, and keyboard and mice were there from the start. It was the other devices that took time — printers, certain types of USB drives, webcams and cameras. The fault lies not in Linux's USB support, which is mature and extensive, but in the support of the particular chipsets all these different devices use.

This is why, under Windows, you frequently get a driver CD with devices — because, while Windows has USB support too, it doesn't know about every chipset in existence. The problem is that no-one releases driver CDs for Linux. By definition, almost all drivers come bundled with the kernel, and for a driver to be written, developers must have access to the specs of a device (which isn't always easy, leading to the time-consuming job of reverse engineering).

This doesn't always happen of course, especially with big players like video card manufacturers. Here, at least, many provide binary (ie. separate from the kernel and with no source code) drivers to be used. But only the big guys do that.

WEBCAM

Case in point, my trendy little MSI webcam. This toy adopted me the last time I visited Computex, and, as a USB device not necessarily recognised by Windows, comes bundled with a driver CD for the same. It's a pretty obscure camera, so I wasn't expecting it to work under Linux — but it all depends on the chipset.

Many devices from competing manufacturers frequently use the same chipset, and so it's the support for a chipset that's often included in the Linux kernel (so such devices work regardless of manufacturer).

However, on plugging in my MSI StarCam webcam, Ubuntu sat there and, well, did nothing. Opening up Ekiga (VoIP application) to see if it could be used as a video input, the webcam couldn't be recognised. Exploring in a console and looking at the kernel messages, it turns out that, as a video device, the kernel does actually recognise it automatically — and is loading the V4L2 (Video for Linux Two) driver as a "PC Camera Controller", only it couldn't recognise the image sensor being used, so that's as far as it got.

A quick search on the web didn't turn up support for this particular camera, and so there wasn't anything else to do. And while Windows also didn't recognise it (only fair to check), the driver CD it came with got it up and running.

It's not entirely fair to mark webcams under Linux as a whole just based on this, as I know of other webcams that do work fine in Linux — just not my one. Ah well.

CAMERA

To be sure, I wasn't expecting much here either. The last time I played around with cameras under Linux, I was met with a similar experience to the above. However, in essence, a camera to the PC is just another USB storage device, so copying the images across should be a plug-and-play affair.

1
A camera has been detected.
There are photos on the camera. Would you like to add these pictures to your album?
Always perform this action
Ignore
Import Photos
I found the camera! (But I canna use it cap'n.)
2
Destination: martigen
Film:
Categories:
PTP/IP Camera
Delete imported images from the
Keep original filenames
An error occurred in the io-library ('Could not claim USB device'): Could not claim interface 0 (Operation permitted). Make sure no other program or kernel m (such as sdc2xx, stv680, spca50x) is using the dev and you have read/write access to the device.
Cancel
Import
3
Destination: root
Film:
Categories:
PTP/IP Camera
Delete imported images from the camera
Keep original filenames
HPIM1952.JPG
HPIM1953.JPG
HPIM1954.JPG
Cancel
Import
Now that's more like it...

And it was, almost. To my surprise, Ubuntu didn't just detect the camera (an HP PhotoSmart R607) as a device to transfer files; it also recognised it as a camera and, much like under Windows, up popped a dialog 1 asking if I wanted to transfer all the images across automatically.

2 Selecting yes, however, presented me with the following dialog box.

Ubuntu was reporting an error with the "I/O library", unable to "claim the USB device". It sounded suspiciously like a permissions problem, so, jumping to a terminal, I checked to see which program was trying to import the photos — gThumb — and ran it with root (administrator under Windows) privileges using "sudo". 3 Voila, it now displayed the contents of the camera to copy across.

Again, Ubuntu falls over with something as simple as the right permissions for device access. The fact that it needed root privileges to run should have been addressed prior to release, and would reveal itself instantly if the feature were tested at all. For Ubuntu users coming from Windows, and with no experience of a console, they simply wouldn't be able to use cameras under the OS. It's one thing to fix media playback due to international licence restrictions; it's another entirely when the bug is a glaring oversight like this.

> I'M GENUINELY SURPRISED BY HOW FAR GNOME HAS COME – AND HOW EASY GTHUMB IS TO USE

IMAGE MANAGEMENT

4 That said, with gThumb running, it impressed the pants off me. In addition to importing images, gThumb is also an image management tool and allows you to view slide shows of the images, organise them via categories, add meta data and do basic image manipulation like orientation, cropping, resizing, format conversion (JPG to PNG, for example). Additionally, it includes tools for adjusting brightness, colour balance, saturation, batch file renaming and even a nifty option to "enhance" the image, which appears to adjust white balance and colour levels for a better effect. It's actually not bad, but doesn't work so well with all images. Finally, gThumb can auto-generate a web album for you, creating thumbnails and an HTML gallery template (chosen from a selection) that you can upload to your hosting service for an instant browser browseable gallery. Failing that, you can always burn images to CD and gThumb will also automate that for you. As someone who doesn't normally play around with cameras and photo applications under Linux, I'm genuinely surprised by how far Gnome has come — and how easy gThumb is to use.

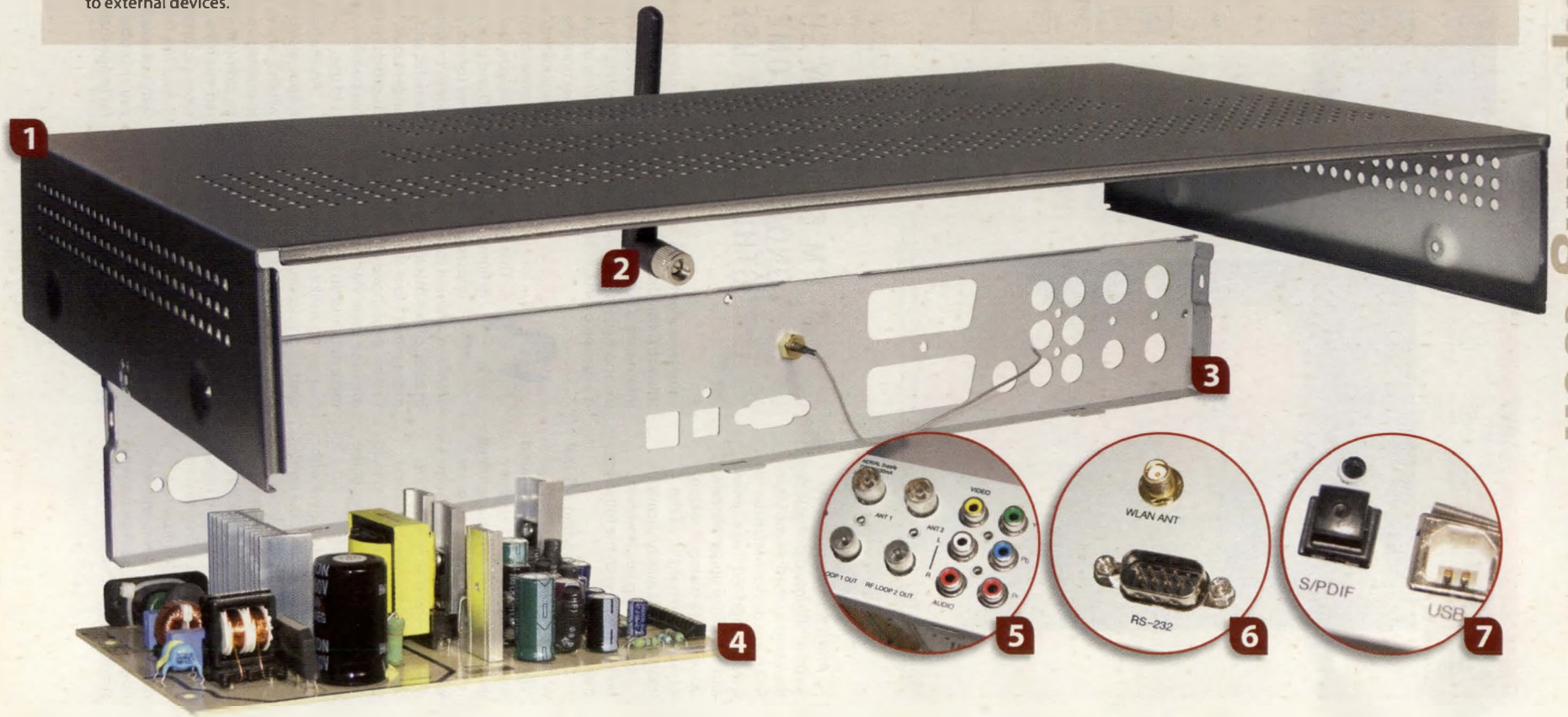
An alternative to gThumb is F-Spot, also bundled with Ubuntu, which features similar options for managing and tweaking images, including the ability to remove red-eye from photos (and with more exporting options including to sites like Flickr and Picassa). The Gimp, of course, is another tool you've probably already heard of for image manipulation, and is bundled with Ubuntu, but we'll save covering that for another time.

USB DRIVES

This is barely worth making an entry for, but since the topic is USB pluggable gadgets (and there's no more pervasive USB device than the humble USB drive), we might as well suck it and see. And who knows, there may actually be those wondering if USB drive *does* work the same under Linux as it does under Windows. And fortunately, they do. For Ubuntu, plugging in a USB drive pops up a Nautilus explorer window, as well as an icon 5 added to the desktop, and you can play with its contents like any other drive on the system. 6 It's not surprising, as USB storage was one of the first features added to the Linux USB layer when it was implemented many years ago. Now lets just hope webcams can catch up.

We explode Topfield's latest digital video recorder featuring wireless networking and a 200GB hard drive for recording TV.

1. Top panel — made from anodised steel, the top panel provides strength and gives a smooth look to the unit. The cover has vents to allow heat to escape with ease.
2. Wireless LAN antenna.
3. Rear panel — steel panel to support all connections from the main PCB and allow connection to external items.
4. SMPS / Power PCB (Printed Circuit Board) — main power supply for all electrical components. Provides power to the main PCB and HDD.
5. RF and AV sockets (antenna IN/LOOP OUT, RCA, YPbPr OUT). RF — antenna in and loop through sockets. AV — component and composite out for connection to external devices.
6. Wireless LAN antenna port — for downloading EPG. Serial port — for firmware update and data transfer.
7. SPDIF OUT — digital audio output socket for digital audio appliance. USB 2.0 Port — for firmware update and data transfer.
8. IDE Link / HDD interface cable — link connecting hard drive and main PCB.
9. Hard disk drive (HDD) — all programs and recordings are stored on a 200GB HD, which Topfield claims will store around 55 hours of full digital-quality programs.
10. HDD bracket — holds the HD onto the main chassis and provides ventilation.
11. Main PCB / motherboard — dual-tuner main PCB decodes the digital signal for recording on the HDD.
12. Main chassis — full 430mm chassis for mounting various components / PCBs.
13. Front display PCB — segmented display to show all relevant information such as channel number and function performed by unit.
14. Front panel — full 430mm-wide front panel provides support for the front PCB with a perspex window to allow communication with the remote.
15. Remote control.



Topfield TF6000PVRt wireless LAN PVR

Geekgear.com.au opens for business

Geekgear.com.au is now taking orders — *Tony Sarno* explains how *APC* finally launched its online store and how much it cost.

It's official: *APC* has an online shop. Geekgear.com.au is up and running, and you can buy products from it. It's e-commerce's version of a TV reality show. It involves real people: *APC* staff and partners NetMerchant. We're trading for real to give our readers an insight into how an e-commerce business operates.

The challenge for *APC* is to make the site cover its costs (see table on page 94). We're starting off with around $24,000 worth of product, ranging from T-shirts with humorous slogans to interesting tech gadgets. Geekgear.com.au uses an e-commerce platform provided by NetMerchant, an e-commerce solutions company which is our partner in the project (and which is providing the e-commerce expertise required). In the building of geekgear.com.au, we've had to make the kind of decisions that face any business wanting to set up an online store. In previous issues, we've discussed product selections and setting up of payment facilities in detail (see **www.apcmag.com/geekgear**), but the following are the key steps that led to the launch of the store:

- **Selection of the e-commerce platform**
- **The payment system**
- **Purchase of a security certificate**
- **Designing the online store**
- **Selection of the stock and product development**
- **Categorisation of products**
- **Ordering and holding the stock**
- **Pricing**
- **Freight solution**

SELECTION OF THE E-COMMERCE PLATFORM

The e-commerce solution an online merchant chooses depends ultimately on the quantity and nature of the products being sold. In essence, geekgear.com.au is powered by a shopping cart with a payment system that handles credit card payments. While the cart is part of a bigger package provided to us by NetMerchant, an off-the-shelf shopping cart with a subscription to a payment system (of the kind provided by dozens of e-commerce providers) is the basic mechanism powering most home-based and small business online stores.

THE PAYMENTS SYSTEM

To be a serious online store, geekgear.com.au needed to process customers' credit cards. We opened an internet merchant account with the Commonwealth Bank (selecting its CommLink facility, which provides online credit-processing facilities on the VISA network), and also an account NetMerchant charged us an establishment cost of $2,995, plus a monthly hosting and support cost of $495. However, NetMerchant's fees also include extra support, consulting and various services such as search engine optimisation. A more bare-bones approach with an off-the-shelf cart would be cheaper, depending on the platform chosen.

THE GOODS SOME OF THE ITEMS WE'VE SOURCED

Wi-Fi detector: sniff out a connection.
geek.
geek gear
DIGITAL MP3 PLAYER
MP3/WMA/REC
For the adventurous amongst us (who actually go outdoors).
Laptop backpack: indispensable for LAN parties.
1GB USB MP3 player: who needs an iPod?

with a payment gateway, SecurePay, which acts as middleman between the bank/internet and the credit card companies.

The benefit of CommLink is the credit card processing can happen behind the scenes with a secure server-to-server call (our Geek Gear web server makes a call to the gateway server on behalf of the customer). The CommLink facility ended up costing $75 to set up, with ongoing costs of $12 per month (plus 1.25% of the transaction). Different businesses attract different VISA transaction rates based on the risk of the products being sold. SecurePay cost $395 to set up and involves a service fee of $0.45 per transaction.

SSL SECURITY

Since the Geek Gear server is going to accept credit card information, we need to secure it with an SSL certificate, which authenticates it and encrypts the data flowing between it and the customer's browser. SSL certificates are resold by most e-commerce providers. We could have bought an InstantSSL certificate for $100 from NetMerchant; instead we've decided to try for a new EV SSL certificate. This stands for Extended Validation SSL — a new type of validation that became available in January 2007.

WE'RE STARTING OFF WITH AROUND $24,000 WORTH OF PRODUCT, RANGING FROM FUNNY T-SHIRTS TO INTERESTING GADGETS

It's like a normal certificate with an extended component that's recognised by at least IE7 and Firefox. When this extended component is encountered, the address bar turns green, providing an additional level of trust. The certificate authorities that issue EV SSL certificates also make more stringent checks on the legitimacy of the entities that buy them. Ironically, this is what all SSL certificates were supposed to be providing in the first place. The EV SSL certificate is much more expensive, at $635, but we think it might be worth it if it engenders more trust for our store.

DESIGNING THE ONLINE STORE

Most shopping carts provide templates for product display and look and feel. We decided to create our own look and feel to work with the basic product display templates provided by the NetMerchant solution. Of course, *APC* has its own art director and designer — but here, acting as an ordinary business wanting to create its own store (and to capture the real costs), we approached an external web designer to design the store. The Brisbane-based design studio Avalde first created a holding page for geekgear.com.au until the rest of the site had been built. This proved to be a good move, since we had over 500 visitors in just four weeks, with close to 20% registering to be notified when the site was launched.

After several iterations with the designer, we called in Luke Amery and the team from NetMerchant to look over the concepts to ensure they could support the necessary e-commerce functionality. With all parties agreeing about the general form and function of the site, the finer elements, such as how detailed product pages looked, were then developed.

Two weeks later, Avalde presented us with Adobe Photoshop files, which NetMerchant sliced into HTML and turned into a functional e-commerce solution. It was important that we support as many browsers as possible (if not, we'd just be turning customers away), so we ensured the final site used standards-compliant mark-up. The bespoke design cost us $6,000. Again, design is a cost you can forgo entirely if you just use the templates that come with many shopping cart solutions.

Amery makes the point that good design is critical for an online retail store: "It's important because it helps establish a level of trust that's hard to achieve any other way."

SELECTION OF THE STOCK AND PRODUCT DEVELOPMENT

In the last issue of *APC* we previewed some of the products we wanted to sell. We also said we would compete on niche value rather than on price. The unique added value would be the cleverness of our T-shirt slogans and our ability to select interesting geek gear we think will amuse our readers enough to make them buy it.

Integrating geek humour into our product line was another important aspect.

USB-powered night lamp: you can still surf when the lights are off.

Binary clock: no-one knows the real time (except for you).

Coffee warmer: for late-night computer sessions.

Since then, we've also decided to experiment by selling at least one item purely on the basis of price: a 1GB MP3 player that can hold up to 240 songs. We can secure this for $30. The going market rate for similar USB players is $50, so we'll aim to undercut competitors by selling it for $45.

In general, however, if it wants to compete on price, a merchant usually needs to sell a high volume of mass-market items. As Amery never tires of pointing out, this is a tough way to do business on the net, because of the very fierce competition.

CATEGORISATION OF PRODUCTS

Categorisation of product is critical for any online store. Since our product selection is modest, we've created just two main categories, *APC*-branded and Geek Gear-branded products. Each category is split into apparel and gadgets.

Amery says, "Categorisation is an important factor in going online with a range of products. It needs to be approached with a customer's mindset — which can be a challenge. It can also factor into search engine optimisation."

In fact, search engine optimisation is critical, so we'll focus more on this next month.

ORDERING AND HOLDING STOCK

A look at the costs table below shows that we've invested in $23,950 worth of stock. This is the point at which this exercise has become a real business — and where we now start carrying a business risk.

We could have taken a safer route by experimenting with the drop-shipments approach, which has found favour with some online stores. Here, an online store doesn't hold stock but acts as a middleman, arranging for the goods to go directly from supplier to consumer. But we felt that this has several disadvantages. One is that suppliers will never be as committed to you as if you hand them cash for their goods, and two, if the store is selling products from multiple suppliers, coordinating their delivery and ensuring it reaches customers within an appropriate time frame becomes a nightmare. And of course, the suppliers can eventually cut out the middleman.

So, we bought real stock. This includes 700 T-shirts of various slogans (in small, medium, large, extra large and extra extra large sizes), 900 caps and 850 gadgets. Once the products had been selected, securing stock from the suppliers was straightforward. With each we put in an order, and they sent us invoices for each job lot. We paid by cheque.

In fact, it turns out that the most difficult thing in getting product for Geek Gear was actually deciding what to sell in the first place. Nightmare would be a simple way to describe the virtually infinite amount of choices for products, suppliers and pricing.

> 'NIGHTMARE' WOULD BE A SIMPLE WAY TO DESCRIBE THE VIRTUALLY INFINITE AMOUNT OF PRODUCTS, SUPPLIERS AND PRICING

PRICING

Since we're selling mostly on the extra value we're creating for the customer, we've set our prices based on what we think the market will bear. We haven't aimed for a uniform mark-up across the board, with our margins varying across the stock. The only exception to this is our USB MP3 player, which we are selling on price, to undercut competitors.

FREIGHT

Since our products are small enough, with no special requirements, we have decided to use Australia Post as our carrier. We plan to offer two freight methods (standard or express post) to allow customers to choose the level of service they desire.

To encourage purchases with higher item counts, we will offer free postage for customers who exceed certain order totals. apc

Sorted: the one-stop-shop for all your Geek Gear needs...

NEXT MONTH

- In the next issue of *APC*, we'll give you a look at our first month's trading results. In the meantime, check out geekgear.com.au!

GEEKGEAR.COM.AU LAUNCH COSTS

Establishment costs	Amount
Domain name	$55
Trading name	$137
Trademark registration	$240*
Web site design	$6,000
Design integration	$2,500
NetMerchant software setup	$2,995
EV SSL Certificate	$635
CommLink setup	$75
SecurePay Payment Gateway setup	$395
Stock order	$23,950
Ongoing costs	
E-commerce hosting and support	$495 per month
CommLink Service Fee	$12 + 1.25% of transactions
SecurePay Service Fee	$0.45 per transaction

*Registration in two categories: merchandise and IT.

ADSL2+

$0 BROADBAND SETUP
WITH 18 MONTH CONTRACT

Download speed#up to

24Mbps

Upload speed#up to 1Mbps

Plan	Xlite	Light	Medium	Heavy	Premium Plus	15GB with VoIP
Monthly Download Quota	600MB~	3GB*	18GB*	30GB*	100GB*	15GB*
Shaping (kbps)	64/64	64/64	128/128	128/128	256/256	128/128
Monthly Charge	$29.99	$39.99	$49.99	$59.99	$129.99	$49.99 (Inc. 500 mins VoIP calls^)

From **$29.99** MONTHLY INC. GST

All speeds are theoretical network maximum speeds. Actual speeds may be less due to a number of factors including distance from your local telephone exchange, network configuration and traffic, the quality of your copper phone line, customer premises interference and the type of your equipment. About 80% of TPG's ADSL2+ customers are currently accessing download connection speeds of between 5Mbps and 24Mbps. ~600MB free, then 15c/MB, max download charge $30; speed shaped when 10GB is reached. *Speed shaped when monthly download quota is reached. ^The specified VoIP capable modem/router must be purchased from TPG at the time of registration. Free call minutes: Apply to Adelaide, Brisbane, Canberra, Melbourne, Perth & Sydney and exclude calls to mobiles. Free calls are calculated with a minimum call time of 10 minutes and thereafter in 1 minute increments. TPG will debit customer's credit card $20 for prepaid call credit to cover calls outside the free calls, e.g. international and mobile calls. Total minimum cost over 18 month contract term for Xlite plan is $539.82 (includes $0 setup but excludes modem cost). Prices subject to change without notice. Full terms and conditions apply. Check TPG website at www.tpg.com.au for details and availability. TPG Internet Pty Ltd 65 Waterloo Rd. North Ryde NSW 2113. ABN 15 068 383 737.

TPG

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- Unlimited private traffic
- 100% throughput
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Office 2007: developing

Now that the Office 2007 system has hit the shelves, *Simon Bisson* asks what will it do for developers?

WHAT'S COVERED

- **NEW FEATURES**
  Microsoft's latest Office suite has finally left beta and is beginning to roll out in businesses around the world. Integration with SharePoint and a new XML file format are only part of the story for developers, as VBA begins to fade away and a new generation of .NET development tools start to take its place. We'll examine Office's new developer features and show how to use Word 2007 to build forms that deliver XML data to your applications.

REQUIREMENTS

- **2007 MICROSOFT OFFICE SYSTEM**
  The latest version of Microsoft Office.
- **WORD 2007 CONTENT CONTROL TOOLKIT**
  Edit Word's content controls.

INSIDE INFO

- Need to know just what developer tools and features are available for 2007 Office? Then download the PDF of Microsoft's developer roadmap. It lists tools and features and shows you which .NET namespaces you'll need to use. Download it from **http://snipurl.com/17r2f** – be warned, you'll need a big printer!
- It's not the only poster for Office developers. You'll find others at **www.microsoft.com/downloads**, including details of SharePoint Server 2007.

You won't have missed the launch of the Office 2007 system. It's been broadcast from every billboard and across countless newspaper and magazine articles (read our full review of the new suite on page 48). You'll have heard how the new ribbon interface will make us all more productive, and how new server applications finally bring all the Office applications together. But there's one thing you probably won't have heard: what it means for developers.

We'll take a whistle-stop tour around the latest Office and see just what it gives us to work with — and what we can do with it.

There are plenty of versions of Office 2007, and they all have something for the developer. Microsoft is treating the Office launch as the point where Office development finally starts to move away from the COM-based, document-focused Visual Basic for Applications to the .NET Visual Studio Tools for Office, with its deep integration features. The new XML file formats also mean that it will be easier to integrate Office files with other applications. Corel has announced that WordPerfect will be supporting Office Open XML, along with the competing Open Document Format, developed by OpenOffice.org.

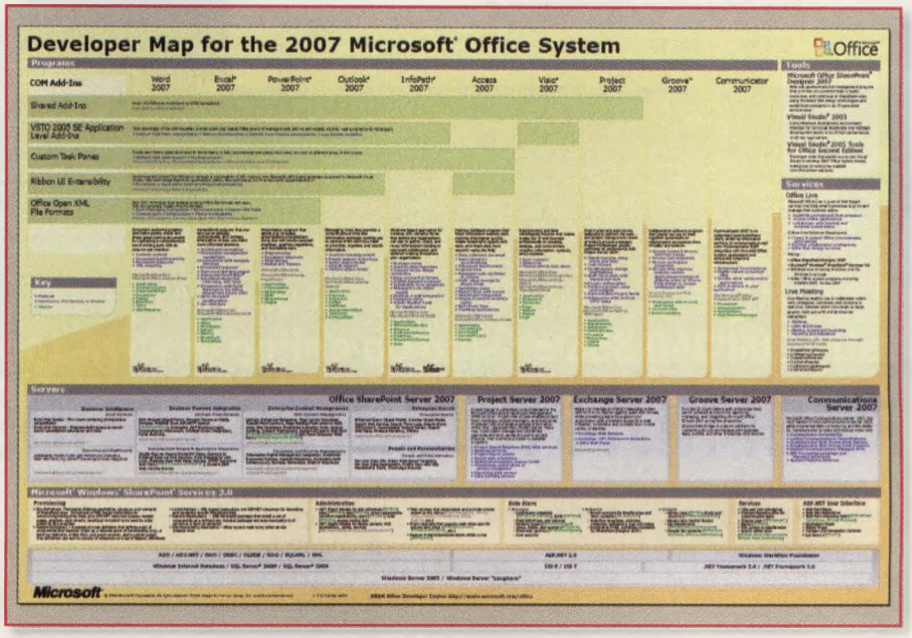
ADD THE DEVELOPER TAB

One of the first things to do once you've installed any Office 2007 application is to head up to its Start menu — if it uses a ribbon — and in the Options dialog box, choose to add the Developer tab to the ribbon. The ribbon interface's task-oriented approach works well for application development, and you'll find all the key tools in one place. In Word 2007 you'll find links to VBA and macros, along with XML schema development tools. Things will also look much the same in Excel 2007, although this program offers more XML options and a different set of controls. You'll even find development tools built into the new version of PowerPoint in Office 2007.

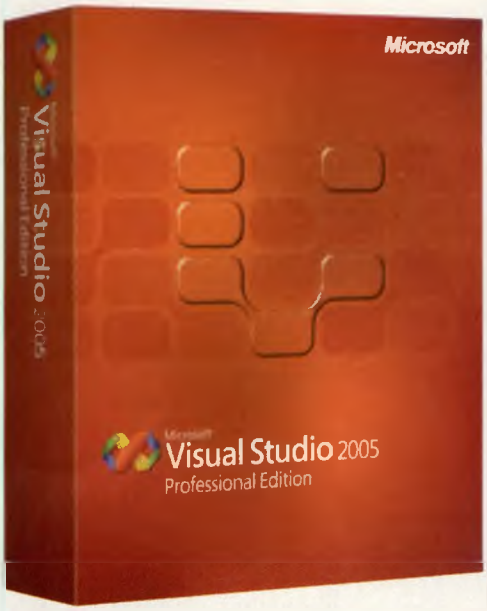
Access 2007 does things a little differently. While the application has always had a role as a

HANDY TIPS

Word 2007 is able to reuse content between documents. Commonly used sections of content can be saved as Building Blocks and inserted in document after document as Quick Parts. Graphical libraries make it easy to pick the Building Block you want, and once you've added it to a document you can use Word's layout tools to fine tune its look and feel. Building Blocks can contain Content Controls, so you can make sure that dates, titles and other important content is added along with the rest of the Building Block. You can also use Content Controls to add specific Building Blocks to a form.



2007 Office System has a lot for developers — from application add-ins to server APIs, built using a selection of development tools.



VSTO 2005 SE is an update to VSTO 2005 and lets you start developing 2007 Office apps.

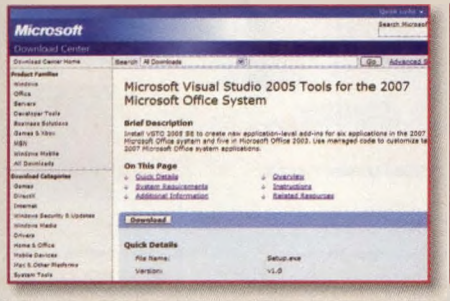
NEW RELEASES — MORE TOOLS FOR ADDED OFFICE PRODUCTIVITY

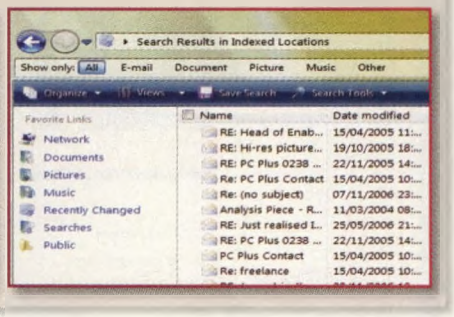
VSTO 2005 SE

The big news is the general availability of the 2007 Office System — a complete refresh of every single Office application and the Office servers. There's a review of the complete package elsewhere in this issue. It's joined by a beta Second Edition of Visual Studio Tools for Office 2005 — which adds Office 2007-specific projects to Visual Studio, but without the visual design tools of VSTO 2005.

WINDOWS VISTA

Another of this month's big releases is the final appearance of Windows Vista. We've looked at Vista in detail recently, but some of its features work better with Office. Search tools will index Office files and even list your emails in a Start Menu search. Vista's Explorer's new live icons give a quick preview of Office documents, and a built-in preview tool lets you see document contents.





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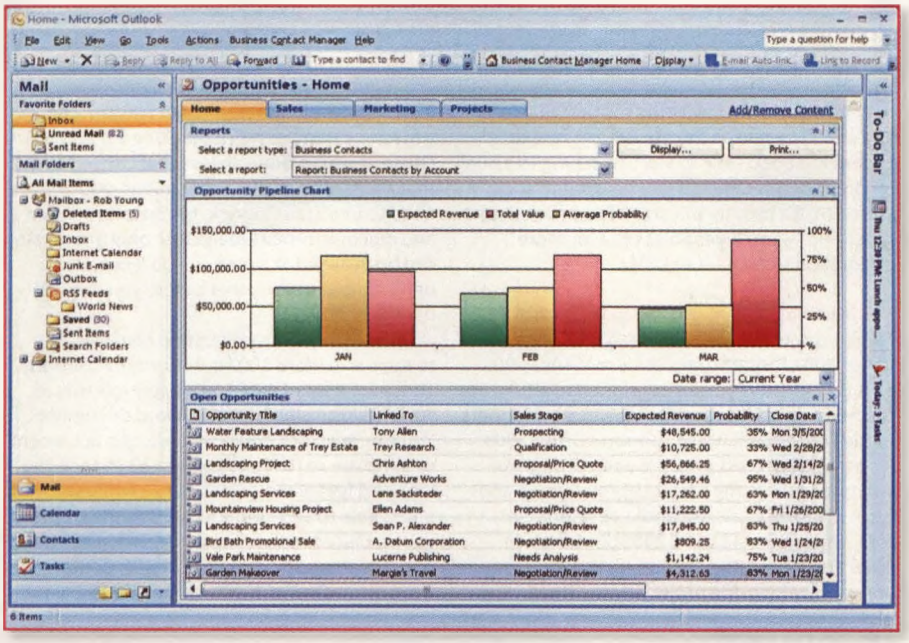
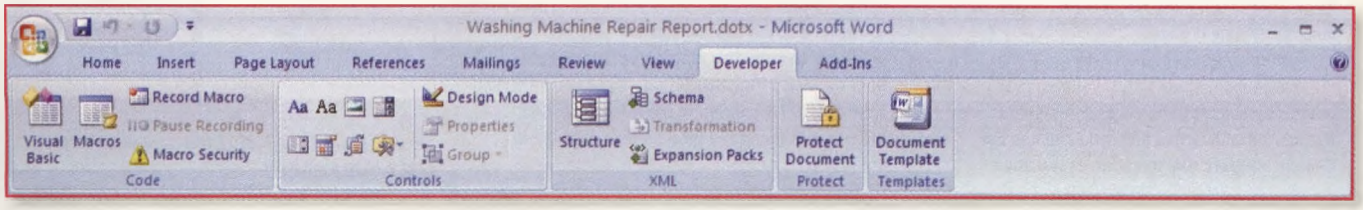


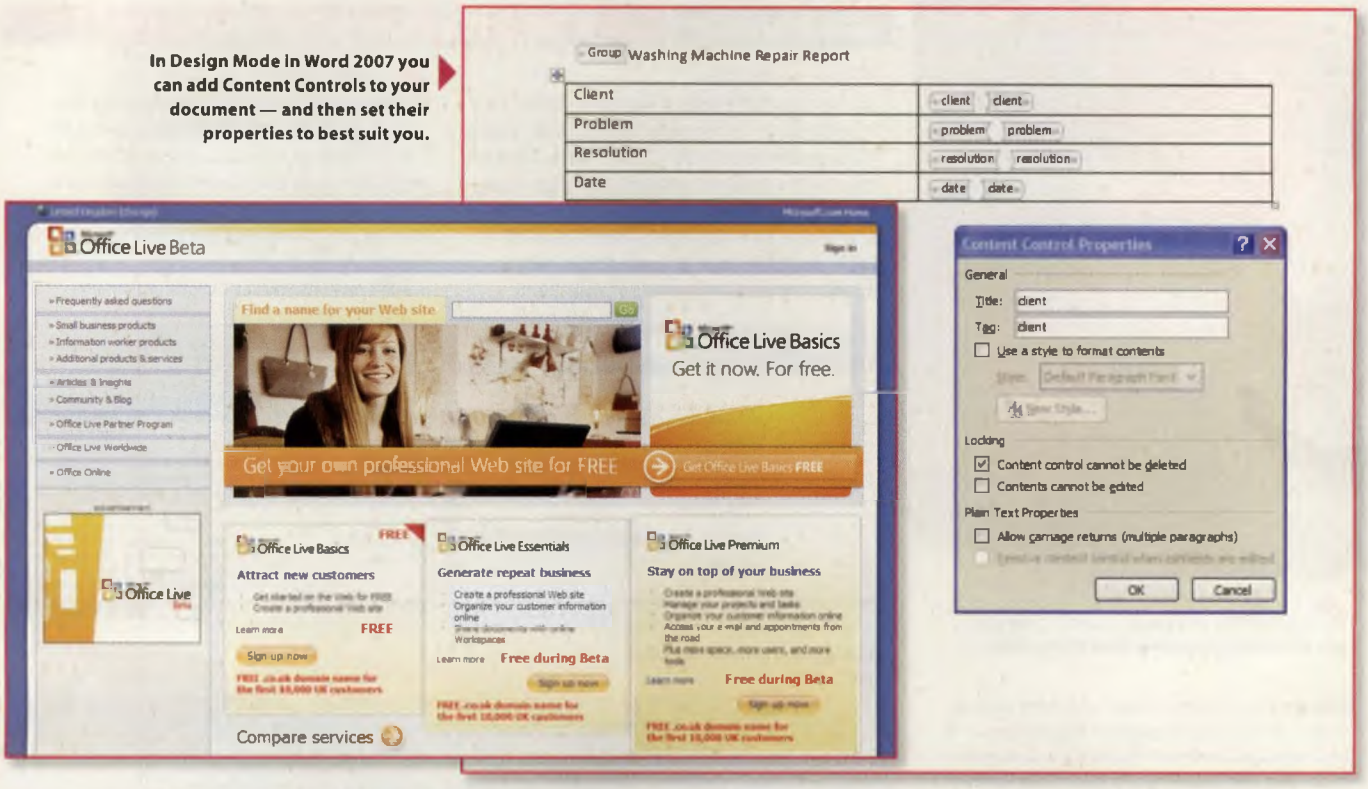
database development tool, this new version strengthens its development capabilities and adds tools to work with more data sources — including InfoPath 2007. Access' ribbon doesn't have a Developer section. Instead, most development tools are found on the Database Tools tab, with VBA support as well as tools to analyse database performance, move data to SQL Server and even automate documentation (something to soothe the troubled brow of anyone who's ever had to fix an orphaned Access application). You'll find plenty of developer tools all the way through Access, which is finally turning into the database application development tool it's always been used as.

Visual Basic for Applications is still a big part of the Office developer toolkit, and the familiar development environment is still there. You'll find that most of the standard COM APIs are still in place, so most code should run without too much work. There are changes to the way most applications work with charts, using embedded Excel rather than Microsoft Graph. This will mean updating any Word or PowerPoint applications to use the Excel chart object model, which has been updated for Office 2007. Excel's statistical tools are now built in, rather than coming from an optional ToolPak, so you'll need to change any code that relies on the old Analysis ToolPak.

While VBA is still a key development tool, its days are numbered, and now that Office 2007's

> THIS NEW VERSION STRENGTHENS ITS DEVELOPMENT CAPABILITIES AND ADDS TOOLS TO WORK WITH MORE DATA SOURCES





In Design Mode in Word 2007 you can add Content Controls to your document — and then set their properties to best suit you.

new XML file format will only support macros if you explicitly save in the new .docm format, it's probably a good time to start switching to Visual Studio Tools for Office. If you do want to stick with VBA, it's best to only use it for in-document functions — you'll get access to a lot more integration features with VSTO.

VISUAL STUDIO TOOLS FOR OFFICE 2005 SE

There's a new release of VSTO to go alongside Office 2007. Visual Studio Tools for Office 2005 SE is a whole new version, designed to work with the new Office UI and with many more members of the Office suite; it also supports Office 2003. It's a free download, which is a big change for what was previously a relatively expensive add-on to Microsoft's Visual Studio development tool. You can install VSTO 2005 SE alongside older versions, with new project types appearing alongside projects from other installations. However, you can't install it on a machine that has more than one version of Office. If you've done an install of Office 2007 that keeps Office 2003 applications, you only need to uninstall Outlook, because new index and mailbox formats mean that only one version can be installed at a time — you'll need to uninstall one or the other before you can safely use VSTO 2005 SE.

One of the more interesting new features to appear in Word 2007 is its Content Controls. These are a set of easy-to-use controls that let you add form elements into Word documents. You can then lock down sections of a document or template so that end users can't change the look and feel of the document — while still being able to add content through the controls you've placed in the document. That's not the only advantage that you'll find with Content Controls — they also add XML content to your Word 2007 files that can be used by external applications. A Word 2007 .docx file is a ZIP file that's full of XML content, which means that any application can read the XML data from the Content Controls — or even be able to add it automatically.

Automatically adding Content Control content to a Word document can simplify the creation of pro forma files — like contracts or reports — that need to be read by people but can be delivered by applications. Instead of creating a whole Word file, all you need to do is write code to produce the XML you'll need, and then insert it into the Office file.

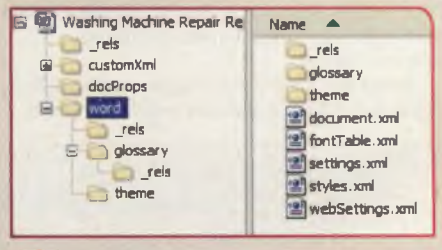
You can add Content Controls to a document from the Developer tab in the ribbon. First, add some content, laying out the form you want to build. Tables make a good structure for some of the controls, especially text fields, drop-down lists and the date picker. Once you've created

DO THIS... OPEN 2007 XML FILES WITH ZIP TOOLS

Office 2007's new XML and ZIP-based file formats are more than they seem. Each file is really a zipped set of directories of XML documents. One way of seeing just what's in a file is to rename it as a .zip, and then open it with a ZIP tool. Of course, if you want to open the file in Office again, you'll need to rename it back.

A more elegant solution is to right-click on a file and choose "Open With". You can then pick the program you want to use — and if it isn't already associated with Office files, you can use the Choose Program tool to set an association. You'll see a list of Recommended Programs and one of Other Program(s). Scroll down through the Other Programs list to find the ZIP tool you want to use. If it's not on the list (not all programs register with Windows correctly) you can use the Browse button to pick the executable you want to use.

Don't tick the "Always use the selected program" to open this kind of file box — you'll want to keep Office the default. Once you've picked a ZIP tool it'll be added to the Recommended Programs list, and it'll then be ready for use in the future.



Inside a Word 2007 .docx file — plenty of XML for you to play with.

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SPOTLIGHT ON... WHAT YOU GET WITH VSTO 2005 SE

Visual Studio 2005 Tools for Office Second Edition (or VSTO 2005 SE for short) works best when installed alongside VSTO 2005. It's an add-on to Microsoft Visual Studio 2005 that enables you to build application-level add-ins for applications in the 2007 Microsoft Office System and the Microsoft Office 2003 System. Given their similar-sounding names, the benefits of having both VSTO 2005 and VSTO SE installed aren't immediately obvious. There are, however, key differences when it comes to the development potential of each.

When it comes to creating document level customisations, you'll need VSTO 2005 – the features are not available in VSTO SE alone. If you want to generate your own application-level add-ins, you're best advised installing VSTO 2005 SE, as the plain VSTO will only let you create add-ins for Outlook 2003. With the Second Edition of the software installed, you'll then be able to make add-ins for most of the major Microsoft Office System applications.

Other key differences between the two versions become apparent when you come to creating custom task panes, adding ribbon extensions to Office applications and working with Outlook from regions. The plain VSTO supports none of these, whereas VSTO 2005 SE affords much wider development potential in these areas. Conversely, if you fancy making host visual controls, using data caches and writing code in a visual document designer, install VSTO 2005 – you'll find the tools you need aren't available in the 2000 SE flavour of the software.

VSTO 2005 SE is really a stop-gap until the next version of Visual Studio, currently codenamed "Orcas" is released, probably in the second half of 2007 – along with a new version of VSTO that should give Office 2007 visual programming and .NET control support.

your document, use the Design Mode button to show tags that indicate just where you've placed your controls.

CONTENT CONTROLS

Place the Word insert cursor where you want to add controls and click on the appropriate icon in the ribbon. Once you've inserted a control, use the Properties button to give it a name and a tag. These will be used to bind the control to an XML document. It's a good idea to lock the control to make sure that it can't be deleted from the document. Once you've built a group of controls and have added appropriate text and layouts, select your document and then use the group button to wrap your content. You can then lock the entire group, making sure that your users can only use it to fill in forms. Make sure you save the document as a template so it can be used again and again. You can also apply further document protections, which ensure that your template can only be used as a form and nothing else.

While you could build all the Custom XML components by hand — and then copy them into the .docx file using any ZIP tool — it's a lot easier to use a tool like the Word 2007 Content Control Toolkit. Found on Microsoft's Codeplex site at **www.codeplex.com/dbe**, the Toolkit delves into your .docx and .dotx files, finds the content controls, and allows you to create and edit custom XML files. You don't need to have Word running, as the Toolkit takes advantage of 2007 Office's open XML file formats.

CUSTOM XML

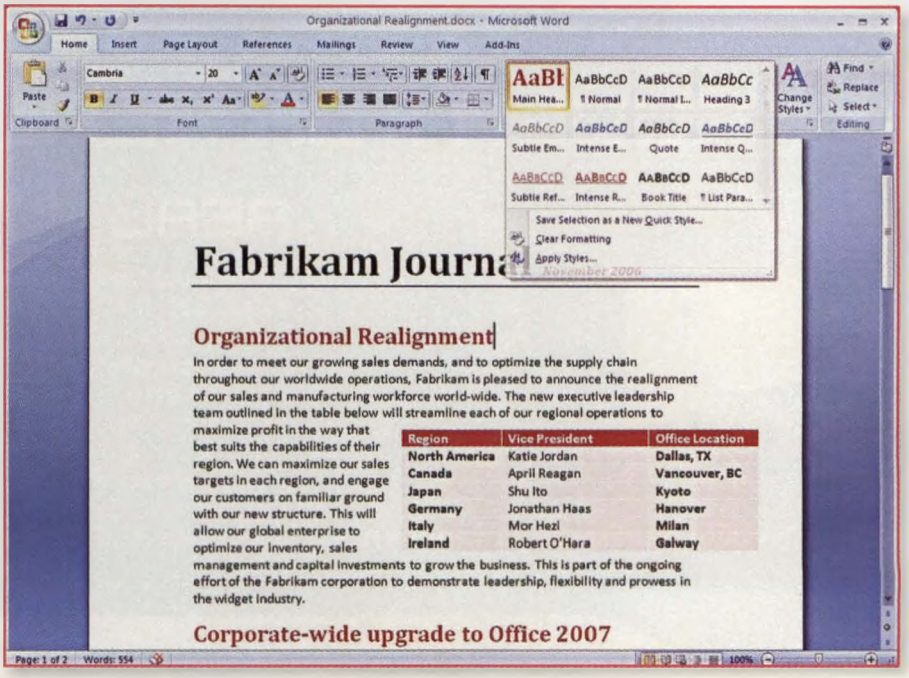
Use the Toolkit to add one or more Custom XML parts to your document template. The current version won't import XML, so you'll need to cut and paste XML from a source code editor if you're planning on using existing XML. Otherwise, you can use the built-in XML editor to create an XML document from scratch. Once you've added the XML to your document, you can then bind your controls to the XML data — just drag and drop XML elements onto the list of controls to build the XPATH statements needed to create the bindings. Save the file to finish building your Word 2007 XML form.

Open the template and fill out the form before saving the file. You can then check if your data has been saved, ready for use by other applications. Use a ZIP file explorer to drill down into the customXML folder in the resulting .docx. You'll find an XML file called "item1.xml". Open this to see the data you added to your form. If you're planning on using this information in an application, you can use a ZIP library to write code that can extract this file from a .docx — and pass it on for further processing and storage.

> VSTO 2005 SE IS REALLY A STOP-GAP UNTIL THE NEXT VERSION OF VISUAL STUDIO IS RELEASED

HANDY TIPS

2007 Office System's new ribbon UI is probably the most obvious change. If you want to use a similar UI in your applications you'll need to license it from Microsoft – and you'll need to sign up for a licence even if you're using .NET controls from a third party. The licence is royalty free, but there are strict design guidelines and you're prevented from using the ribbon on applications that compete directly with the core Office tools – though you can use the UI on any operating system. Head to **http://snipurl.com/17r81** to find out more about the licensing programme.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Build OpenOffice databases

Paul Hudson **and** ***Graham Morrison*** **show you all the tips and tricks you'll need to master OpenOffice.org's Base.**

WHAT'S COVERED

- Creating a database can be a daunting prospect, but open source applications are available for all levels of user. First, we'll explain how to build a CD database using OpenOffice.org's Base, and then we'll go on to look at more advanced databases – MySQL and PostreSQL – that are used by business and home users alike.

INSIDE INFO

- For people getting started with OpenOffice.org Base, the best place to get help is at **www.oooforum.org** – it's a large and friendly community of OpenOffice.org users who share hints, tips and help for all parts of the OOo suite.
- For more advanced users, the definitive book on MySQL is called simply *MySQL* by Paul DuBois (ISBN: 0672326736), and weighs in at almost 1,300 pages.

Databases are scary things, and use confusing jargon that often requires a degree in Computer Science to understand. But thanks to projects like phpMyAdmin and OpenOffice.org Base, you can get all the power of a database without having to dirty your hands with words like index, schema or query. In fact, OpenOffice.org Base is smart enough to be able to handle desktop-sized databases for dealing with your CD collection, all the way up to big-iron enterprise databases that run across hundreds of machines in a server farm.

Following Microsoft Access, OOo Base does all this with a simple and friendly user interface — at least compared to most of the other database solutions out there. But if you're new to databases, the whole thing will probably seem overwhelming, so this issue, we're going to build a CD collection database all of our own.

CREATING A DATABASE

For simple databases where you don't plan to let multiple people read and write your data at the same time, Base uses local files to store its data. This means that all you need to get started is Base itself — there's no need to install MySQL or phpMyAdmin. First, choose "Create a new database", then click Finish straight away. You'll be asked to provide the file name for the database, so use "cdcollection".

The first thing we're going to do is create a new table in which to store all our CDs. On the left of the main OOo window you'll see a Database pane that lists Tables, Queries, Forms and Reports. Tables are where your data is stored, Queries are stored searches inside your tables, Forms are attractive user interface windows that let people edit table data and Reports are printable queries. For now we just want to insert some data, so select the Table view, then click "Create Table in Design View" from the Tasks pane.

In this window you need to define every field (piece of data) you want to store for each row in your table. For example, if you want to store information about people, your rows would be the people themselves, and the fields might be Name, Email Address and so on. We're interested in CDs, so give the first field the name "Name" with type Text, the second field the name "Artist" also with type Text, and the third field the name "Rating" with type Small Integer. This last field will hold a number between one and five depending on the rating of each CD.

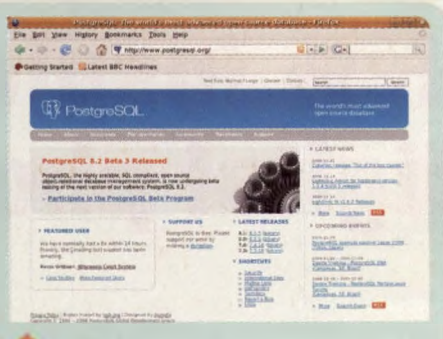
We're done — click the Save icon in the top-left corner of the screen and OOo will prompt you for a name for the table. Call it "cds" and click OK. You'll now see a warning message saying that you have no primary key. This is a special field that most tables have, which is used to store a unique value for every row so that they can be referenced easily. For example, if we have 20 people called Joan Smith, and one just got married and changed her surname to Jones, how can we specify exactly which Joan Smith we want to change to Joan Jones? Having a primary

SPOTLIGHT ON... PHPMYADMIN

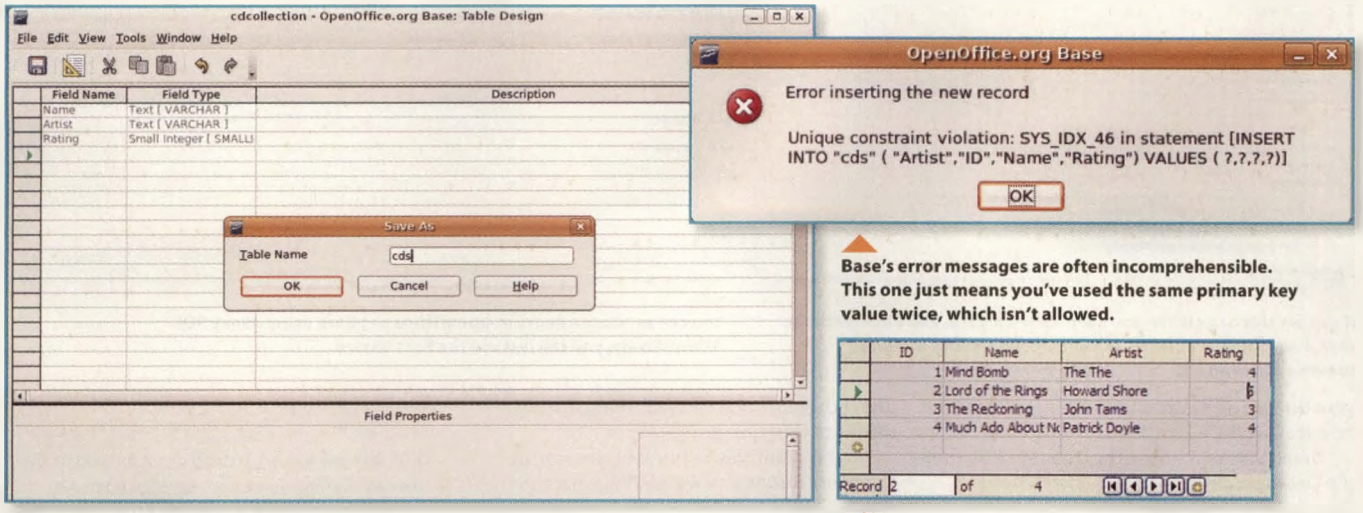
The first thing you're going to want to do with your new database is create a table for holding data. Once you've logged into PhpMyAdmin, select your database from the drop-down Database list on the left. To create a new table, click on the *** icon. The view will then change to a window asking for a matrix of options.

At the very least, you'll need to create an index for your table by adding a field name called something like "Index" with a type of integer. You will also need to set the Extra field to "auto_increment" so that each new record gets an incremented index number. The other fields you need to add will be entirely dependent on your database, but typical examples will include Forename and Surname of type VARCHAR, or "Comment" of type "TEXT".

PhpMyAdmin makes managing a MySQL database relatively straightforward. It basically generates the SQL for your instructions automatically, depending on which buttons and options you select. It also makes a very good backup tool, because you can dump the entire contents of your database into a MySQL text file. If you've a little SQL database experience, then most of the options should be self-explanatory. Once you've selected your database from the drop-down list on the left of the main page, the options in the main frame will change to reflect the most common database functions or their effects.



When you can't avoid typing SQL statements manually, PhpMyAdmin will help.



Designing a table means giving names and data types to each field. There are lots of data types, but stick with integers and text and you'll be OK.

Base's error messages are often incomprehensible. This one just means you've used the same primary key value twice, which isn't allowed.

The Base wizard gives you all sorts of options for creating your forms, but the spreadsheet looks rubbish.

key field would solve this problem, because each Joan would have her own unique number. Click "Yes" to the warning box to have OpenOffice.org automatically create a new field called ID, and make that unique for us. Now close the Table Design window to return to the main Base window.

THE SOUND OF MUSIC

Your "cds" table should now be visible in the Tables pane, which means we're OK to start entering in some data. When you double-click on the table, you'll get another new view, this time showing your fields along the top (ID, Name, Artist and Rating) and the rows along the left. There aren't any rows just yet because this is a new table, but you can add new rows just by typing. So, try entering these values (we've used a comma to show where the field breaks are):

```
1, Mind Bomb, The The, 4
2, Lord of the Rings, Howard Shore, 5
3, The Reckoning, John Tams, 3
2, Much Ado About Nothing, Patrick Doyle, 4
```

You will need to press Enter after each row to start the next row. When you press Enter after that last row, you'll get a rather excellent error message: "Error inserting the new record. Unique constraint violation: SYS_IDX_ 46 in statement [INSERT INTO 'cds' ('Artist', 'ID', 'Name', 'Rating') VALUES (?, ?, ?, ?)]". This is arguably one of the most cryptic and meaningless error messages we've ever seen, but once you take it out of database-speak, you get this: "You can't give Much Ado About Nothing the same ID number as Lord of the Rings, because it's supposed to be unique, dummy!" Hopefully that should make a bit more sense, so go ahead and change Much Ado to have the ID number 4. This time OOo shouldn't complain, so click the Save button to commit all your changes.

This table-editing view looks and works somewhat like a spreadsheet, but as you'll see later it's a great deal more powerful. For now, try clicking on one of the column headers (such as, Name) and clicking the Sort Ascending button — it has the A..Z icon. This works for numbers (where it puts 1 before 2, and so on) and for text (where, for example, it puts A before B, and AA before AB). You can also filter your data so that it temporarily hides rows that don't have a particular value in a field. For instance, both Mind Bomb and Much Ado have Rating values of 4. Try selecting either of those 4s, then clicking the AutoFilter button — it looks like a funnel with a horizontal dotted line cutting it through the middle. This will hide the other two CDs, because they don't have a Rating of 4.

Close the window to get back to the main OpenOffice.org Base window — we're going to up the ante a bit.

FORMING UP

Choose the Forms view from the Database pane, then click "Use Wizard to Create Form". As mentioned earlier, forms are graphical user interfaces designed for viewing and editing data in tables. In OOo, these forms are created using Writer, and they can be quite hard to work with for the first time. Fortunately, the wizard is able to add all the fields you want and lay them out neatly, so it's the best place to start.

The first screen allows you to choose which fields you want to show on the form. Click the >> button to add all the fields in the "cds" table, then use your mouse to jump to step five ("Arrange controls"). This lets you choose the basic layout of the form, with the two options being either to use a spreadsheet style or to use little text edit boxes with labels. This last option generally looks the best, so choose the fourth arrangement option and click on step seven ("Apply styles"). To be blunt, it's basically impossible to use one of these styles to create an attractive user interface, so this screen is really about damage limitation. As a hint, the default "beige" might look colourful and interesting today, but no-one will thank you for using it! Try "grey" or "ice blue" for less-offensive options.

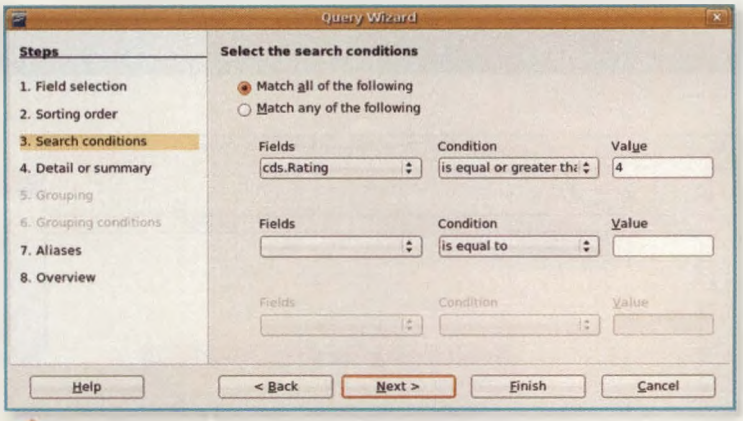
Once your form is ready, leave "Work with the form" enabled so that you'll immediately be able to use the form as an end user might do. If you want to make changes rather than use it, choose "Modify the form" — this enables you to drag fields around, change the colour scheme, add new fields if you want to, and so on.

GETTING ANSWERS

The last cool thing that Base can do for you is to search through your tables to find results that match a set of critera. These searches are then saved and called "queries", and you can make these queries as complicated as you want. As a nice bonus, OOo lets you produce forms based on the results of these queries, which means you can break away from just showing the contents of forms.

As with forms, queries can be designed either using the wizard or a design view, but there's also the extra option of SQL View for very advanced users. We suggest sticking with the wizard view, as it allows you to drag-and-drop

If you see this page when you've installed MySQL and PhpMyAdmin, then everything is working as it should. Enter your database password to connect.



You can produce a query in OpenOffice.org Base using geeky SQL. Alternatively, you can just use the Base wizard.

your query design without needing to learn how it all works.

To get started, choose the Queries view from the Database pane, then click "Use Wizard to Create Query". As with the form from before, click the >> to add all the fields from our "cds" table into this query, then click Next. The next step is to choose how you want your rows to be sorted, which is a common need when using forms. Unless you're very anal indeed, you probably entered your CDs into your table in a first-come, first-entered way, meaning that they aren't alphabetical. Rather than trying to re-order them while keeping them with ascending ID numbers, just enter them in any order you want and use this query option to change the sorting of the rows when the query is executed. For now, set the Sort to Name and click Next.

Now comes the main part of the query: what are we looking for? OOo allows us to search for specific values on any of the fields, and you can even combine searches so it searches one field first then another one and even a third one if you want to be really specific. For now, set the search field to Rating, the search Condition to "is equal or greater than" and the Value to 4. This will find all CDs that we've rated as four or five. The rest of the parts of this dialog aren't that important, so just click Finish, and Base will bring up the results of your query.

At this point, you're probably looking at the query results and wondering what the differences between that and your original table are. Well, there are two:

1. This query is a subset of your full data. The original table still has the other CDs we didn't rate as four or five.
2. This query respects your sorting request.

What's more, it does those two things while still letting you edit your data — any changes you make are automatically fed back into the main table. So there you go: kiss goodbye to abused spreadsheets and get your data into order using nothing more than Base's GUI. Once you've mastered queries and forms, why not give Reports a try?

MYSQL

Using a database that's part of an office suite is great for personal use, but it doesn't take much data to outgrow something like Base. Fortunately, open source development and the GPL has given us two of the most respected medium-scale databases money doesn't need to buy: MySQL and PostgreSQL. They're both database heavyweights and are used by thousands of businesses and normal users alike. They scale well and can cater for the hundreds of thousands of records you typically find in a content management system, just as well as the 40 or 50 records used by MythTV to hold the television channels and program data. Even if databases don't light your particular fire, knowing a little about how to install and use one of these databases will open up a whole new world of possibilities. And you won't even need to get your hands messy. Hacking around on the command-line to configure and manage your database can be a little tedious, but thanks

HANDY TIPS

KDE 4 (www.kde.org) isn't due out for another six months, but the developers have completed a large chunk of several innovative back-end APIs that they hope will make KDE 4 the desktop of the future. Application developers can use all the new features implemented into these APIs now to add things like integrated searching, media playback and hardware configuration. Each new technology also has an aspirational name, such as Appeal, Plasma, Phonon and Solid, which the developers hope will help to define the "KDE 4" attitude.

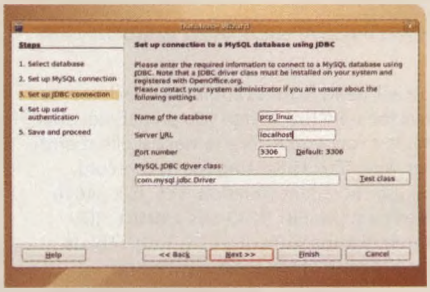
DO THIS... MIX IN MYSQL

As mentioned earlier, OpenOffice.org is perfectly capable of reading its Base data from any data source it can get its paws on. Thanks to its tight Java integration, Base can read from a large number of other programs, including Microsoft Access, Oracle and – most interesting for our purposes – MySQL. You'll need to have the libmysql-java package installed, as that provides the JDBC (Java DataBase Connectivity) layer that links OOo to MySQL.

When OOo Base starts, look for the "Connect to an existing database" option on the welcome screen and choose MySQL from the box there. Click Next twice to skip past the ODBC/JDBC options and it will prompt you for some information. For "Name of the database", enter the database name you created with phpMyAdmin. For Server URL, enter "localhost", then click Finish.

The last screen asks you to enter your user information. If you don't have another user, you can either use phpMyAdmin to create one, or you can just use your MySQL root user – as long as it's just for testing.

Click Finish, give the database a local file name where OOo can store its settings, and you're done. From here on, OOo looks and works just like it does with a local database, except now your data is being saved and served elsewhere.



Get connected by installing the libmysql-java package on Ubuntu.

to a well designed front end to MySQL called MyPHPAdmin, remembering the command you need to back up your data or add a new row becomes a thing of the past. Just use PhpMyAdmin to control your MySQL database from wherever you happen to be at the time.

As is typical of many database applications of this size, MySQL functionality is split between a client and a server. It's the server that's responsible for storing all the data and managing the actual database. The client connects to the server to either request or send new information to the server. But just because there is a separation between the client and the server doesn't mean that they need to be running over a network — it's perfectly acceptable to run both on the same machine. This division of labour makes a database such as MySQL very useful when you have many clients requesting information from the server, which is how a database is most commonly used.

If you want to try out MySQL for yourself, the first thing you need to do is install the required files. MySQL — and PostgreSQL — are now so widespread that you will find them bundled with nearly every Linux distribution. They might not be installed by default, but installation is a simple matter of launching your distribution's package manager and performing a search for MySQL. With Ubuntu, for example, you will need to install both the MySQL-Client and MySQL-Server packages. This will install the latest version of MySQL, which with any distribution released over the last 12 months, will be version 5 — but version 4.1 is also still in common use. If you've no reason to use the older version — such as a piece of software requiring 4.1 for example — then obviously version 5 is going to be superior.

The MySQL server is a service that needs to be started in the background. You can do this from the command-line by typing "/etc/ init.d/ mysql start" as root. You may find that your distribution has its own graphical interface for managing services like MySQL. Mandriva, for example, has its own services configuration panel that you can find by running the System Configuration application. This will also let you start MySQL at boot time if you need it.

USER ACCOUNTS

MySQL uses its own user accounts for granting the various levels of access you might require for database projects. However, when it's first installed, there will be a single root account. This is quite separate from your Linux root account, but it's still a liability — not least because anyone with access to MySQL's root account can reconfigure any MySQL database. Also, with most MySQL distributions, the MySQL root user doesn't have a password when first installed. The command for connecting to your MySQL server as root is "mysql -u root". Without asking for a password, this will give you root access to the server. To create a password for your root account, you need to use the "mysqladmin" command from the command line. For example, typing the following will set the password for the root account to testtest:

```
mysqladmin -u root password
testtest
```

You will now need to type "mysql -u root -p testtest" to connect to the server using the root account. But as with Linux in general, it's unwise to use the root account for anything other than macro-database management, and even then it might be unnecessary. It's more secure to create a specific MySQL user for each database application you're going to use — in the same way you'd create a new Linux system user for different people using your computer. But before creating the new user, we need to create a database that the user can access. Just connect to the database as root, and type the following: "create database mynewdb;", to create a new database called "mynewdb". Finally, to create a user that will have enough privileges to use your new database, type the following:

```
grant all privileges on mynewdb.* to
mynewuser identified by 'pwd';
```

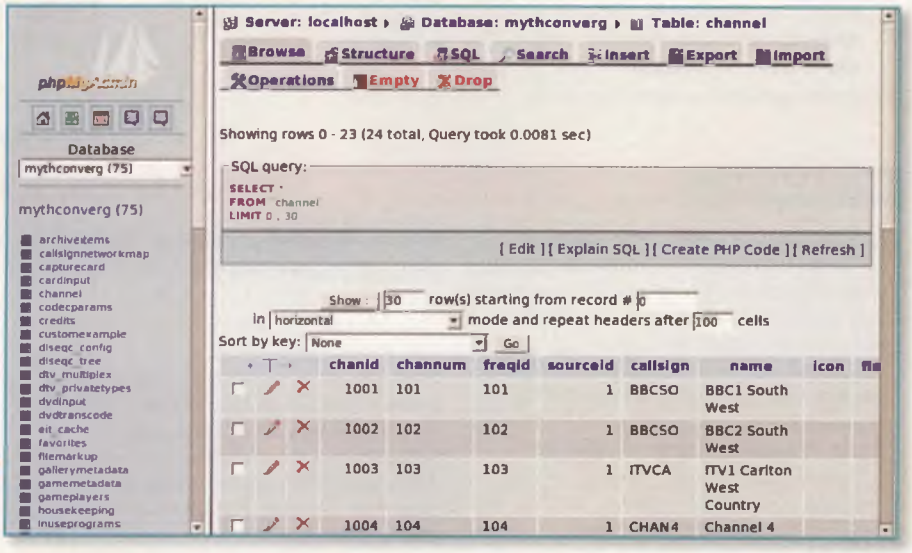
This will create a new user called "mynewuser", and this account will have complete control over the "mynewdb" database. If you type "quit", followed by "mysqladmin -u mynewuser password pwd", you will be connected to the MySQL server as the new user. This is the point where you'd typically start diving in to the table creation and data-adding frenzy that makes a database useful. This is all accomplished using the Structured Query Language, the SQL that MySQL is alluding to. But SQL can be tedious, and it's also very difficult to visualise the changes and additions you're making. What's needed is a visual front end to your new database — something that removes a little of the monotony from typing one SQL statement after another. And the answer is PhpMyAdmin.

PHPMYADMIN

PhpMyAdmin is a graphical front end to MySQL that uses PHP running on a web server. This is perfect for MySQL, because it means you can configure and manage your database from anywhere on the internet. PhpMyAdmin is also very common and, like MySQL, should be included with the packages bundled along as part of your Linux distribution. Apart from requiring PHP version 5, PhpMyAdmin will also require the php-mysql module installed and configured for Apache. However, Apache should be configured automatically by your package manager after installation.

Once PhpMyAdmin is installed, you'll need to connect to your Apache web server using a web browser. Exactly where PhpMyAdmin is installed will depend on your distribution, but you can usually find it by typing "http://localhost/ phpmyadmin/main.php" into your browser. If you get an error, click on the "Setup Script" link to run the configuration script. The only thing you need to configure is the address of your MySQL server, so click the Add button in the Servers box. You don't always need to do this as distributions like Ubuntu will already include a basic working configuration, along with a couple of template MySQL databases.

Once PhpMyAdmin is configured, reloading the main page will display a username/ password request where you can enter your MySQL user account to get access to the user's database. After entering the username and password, the main PhpMyAdmin page will load. Here, you can create and modify database tables, as well as construct SQL statements for probing the data contained within the database without having to resort to either the command line or your SQL reference guide.



PhpMyAdmin is the perfect way to manage large databases remotely. Here, a MythTV program database can be edited without running the software.

SQL Server Express

Gary Bond completes a database project with VB.NET and Microsoft's free database engine.

WHAT'S COVERED

- This database project uses SQL Express, the free SQL Server version, and VB.NET. We walk through building a windows form for holding contact data, and the back-end data store. We look at Management Studio Express for managing your SQL Server. This project uses just 20 lines of code thanks to VB.NET's databinding, and yet the form allows adding, deleting and altering of records, as well as an up-to-date view of your data at all times.

REQUIREMENTS

- **VB.NET EXPRESS**
  Free from **http://msdn.microsoft.com/vstudio/express/vb/**.
- **SQL SERVER EXPRESS**
  Comes as part of the VB.NET Express install, or free from **http://msdn. microsoft.com/vstudio/express/sql/default.aspx**.
- **SQL SERVER MANAGEMENT STUDIO EXPRESS**
  Comes as part of the VB.NET Express install, or free from **http://msdn.microsoft.com/vstudio/express/sql/default.aspx**.

SQL Server Express is an amazing tool to give away free. There's even a more fully featured version available, also for free, incorporating Reporting Services. For a small business, this is heaven. Imagine developing in-house applications, backed by the power of SQL Server, at no cost.

If you sell software you can even redistribute SQL Express with your applications — again this is for free.

If you have VB.NET Express installed, it's likely that you also have SQL Express, because it comes as part of the default install. Take a look at your Start Menu programs and you should see a Microsoft SQL Server 2005 folder. If not, you can always download and install the server free from MSDN. Once installed, it's easy to check that it's working correctly.

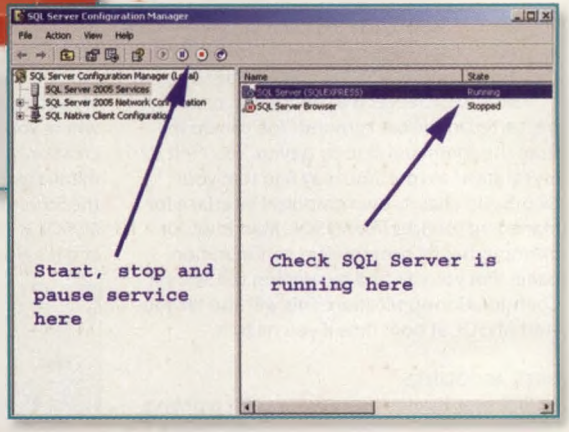
Once you've launched SQL Server Configuration Manager, use the illustration image as a guide to check the server is running. If not, you can start it via the manager application. The blue arrows point out where to look and how to start the server.

Now we know the server is up and running, let's walk through database creation via another free tool — Management Studio Express. It's a cut-down version of the tool the professionals use, so you should definitely download it. When installed, run the program and connect to SQL Server. The default name will be "localhost\SQLEXPRESS".

USING MANAGEMENT STUDIO

Expand the Databases node in the Object Explorer. Then right-click on the node and choose New Database, enter contacts for the new database name and next add a database table. Right-click on the Database Diagrams node and choose New Database

We're using a cut-down version of Microsoft's professional edition to do everything from new database creation to designing stored procedures.



Launch SQL Server Configuration Manager for monitoring and controlling your install of SQL Server Express.

SPOTLIGHT ON... T-SQL

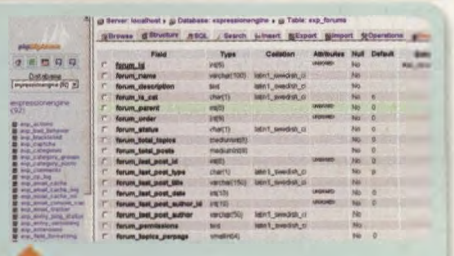
SQL is the language that has been used to manipulate data since Dr E. F. Codd published the paper "A Relational Model of Data for Large Shared Data Banks" in 1970. We're still using his ideas — Microsoft's implementation is called "T-SQL". If you want to work as a developer in almost any industry, you must have a good understanding of SQL.
For instance, the command below shows all the data in our Contact table and isn't destructive:

```
Select * from Contact
```

Whereas, the following command will delete all data from our Contact table:

```
Truncate table Contact
```

Careful though: there's no undo command in SQL either, so you can't get the data back. You can run these commands and begin to learn the language in Management Studio Express. It's a free product from Microsoft that represents an invaluable resource for learning T-SQL and associated database techniques.



T-SQL is Microsoft's implementation of SQL, which is free for you to download and use as an invaluable learning resource.

Diagram. You will most probably get a warning that some support objects need to be created for the database. Click yes and then close the Add Table dialog.

Right-click on the blank diagram surface and choose New Table, then enter contacts for the new table name. Now we need that most important of columns, the primary key. Add "ContactID" for the first column name, "int" for the data type, and clear the tick in the allow nulls column, which ensures that we have an entry in every row for our primary key.

SET THE PRIMARY KEY

In the properties window on the right-hand side, expand the Identity Specification node and change the Is Identity to "Yes". This makes sure we will have a new number entered into the ContactID column for each new row we add to the table. Now click the small key in the toolbar while we are still in the ContactID row. This tells SQL Server to use ContactID when it needs to tell one row from another. Now add some more columns as you see fit.

When you're finished, save the diagram with a name of your choice and note what happens. Saving our new database diagram has created our table for real. This is a great advantage and speeds up the creation process.

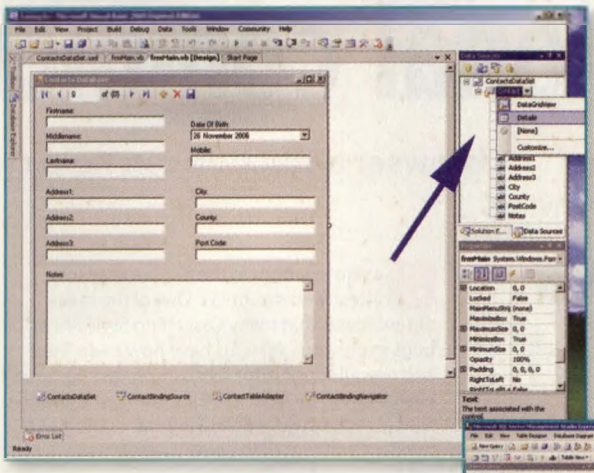
We had to jump through several hoops to get our simple database to this stage. Try the steps yourself first to get a feel for the process, since you will be doing this for every new database you create.

With a blank database file, right-click on the Databases folder in Management Studio and choose Attach. Navigate to the new folder on your drive and click OK. This attaches the new, blank database to SQL Server and sets you up with a fresh, blank database table. Right: now it's time for some coding, although thanks to the power of .NET databinding, there won't be too much.

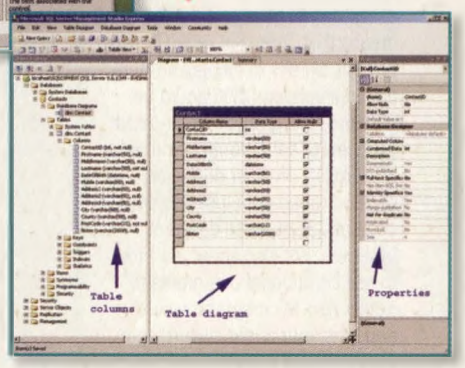
DATABINDING

Fire up VB.NET Express and create a new Windows Form project. Find the Data Sources window and click Add New Data Source, then click to accept the default Database option and choose New Connection. Make sure to select the SQL Server option and then browse to the database file Contacts.mdf.

The next dialog box asks if we want to copy the database file to the project. It's worth pressing F1 to read about this behaviour, but, for now, say no to the prompt. We can accept the next prompt, however, which copies the database connection string to our application config file. All that is left is to choose the Contact database table in the next prompt and we are done. In the Data Sources window you'll see that there's now a node called ContactDataSet.



The project in development: VB.NET allows us to choose which controls are created in the drag-and-drop operation here.



A database file such as you can use with Management Studio.

VB.NET allows us to drag this node from the Data Sources window to the form, where it will create a new control for each column in the table. To alter the type of control VB creates is easy: just right-click on the down arrow at the side of the Contact table. In the drop-down that just expanded, choose Details.

The details option tells VB to create text boxes for most of the controls. Now, go ahead and drag the Contact table from the Data Sources window to the blank form surface. VB.NET creates all the controls necessary to interact with the database, including a video-style navigation control.

Rearrange the controls to suit and run the project. You can add data, save your changes or delete the entire record. Just before we add some code, it is worth creating and deleting some data to get a feel for the application in its raw state. It works, but it has a couple of annoying features.

If we type data into those inviting text boxes the first time we run the form, and then click the save button, the data isn't saved.

The problem is we didn't click the small plus symbol in the navigator to indicate that we want a new record first. I think this is annoying, so add this code to the Form Shown event:

```
If ContactsDataSet.Contact.Rows.
Count = 0 Then
MessageBox.Show("No data. Please press the
'add new' button above
[the cross]")
End If
```

Here we are checking if the dataset contains any rows. If not, we remind ourselves that we need to add data by using the add button with a messagebox.

Another problem we need to code around is that if we add records and don't save the data, the form can be closed and our work gets lost with no warning. Add the following code to the Form Closing event:

```
If ContactsDataSet.HasChanges
Then
'Display a MsgBox asking the user to save
changes or abort
If MessageBox.Show("Do you want to save
changes?", "My Application",
MessageBoxButtons.YesNo) = Windows.Forms.
DialogResult.Yes
Then
'Cancel the Closing event from closing the form.
e.Cancel = True
End If
```

We again check the underlying dataset for changes, and, if any exist, we prompt the user.

We cancel the form-closing operation by setting the FormClosingEventArgs parameter e.Cancel to "true".

Such is the power of databinding in .NET 2 that this is all the code we have to write. Play with the project and add some data to it. Then also note how you can interact with SQL Server via Management Studio Express. For the price, these products are truly fantastic bargains.

HANDY TIPS

Databinding relies on an in-memory representation of your data, and this local memory cache is more often than not a typed dataset. VB.NET's data designer surface allows us to create a dataset from scratch or edit an existing one. If the application is on a company laptop, then we persist with the data into XML via the dataset's WriteXML method and make the changes back in the office.

Conditional comments

***Karl Hodge* explains how browser detection can help create pages that work in any browser.**

WHAT'S COVERED

- With Internet Explorer 7 added as a high priority update to Automatic Updates, a large number of XP users should have upgraded. This means that sites that relied heavily on CSS tweaks to display properly on older versions of IE could be breaking. We give you an in-depth overview of conditional comments, a Microsoft browser detection method that can be used to serve custom CSS rules to different browsers. We also show you how to use conditional comments to detect non-Microsoft browsers and alter your pages accordingly.

Several changes in the IE 7 browser may affect web designers. One of the main differences is that many Cascading Style Sheet bugs in previous versions have now been fixed and overall support for CSS is improved. Microsoft even went so far as to issue a statement through IEBlog — the official online journal cataloguing the development of the new IE. It warned designers that existing hacks and CSS workarounds may break in IE7 and that builders should amend their code accordingly.

In November of last year, IE7 was rolled out to users as a high-priority update via Automatic Updates in Windows XP. This delivery method has previously been reserved for crucial security patches, bug fixes and upgrades to Window's Malicious Software Removal tool. Users could refuse the installation and not everyone has Automatic Updates enabled. But we expect a significant proportion of users now use IE7.

This brings up a dilemma for web developers who have tried to make their sites work on all the main browsers. The traditional method of patching your CSS with cut-and-paste fixes works on older browsers, but could break your site on IE7. And as long as there are legacy browsers out there, we have to cater to them.

Fortunately, there's a solution that should fix CSS rendering problems in most scenarios: write different rules for different browsers using "conditional comments". This allows you to stick to standard CSS, rather than hacking around trying to fool the browser you're targeting.

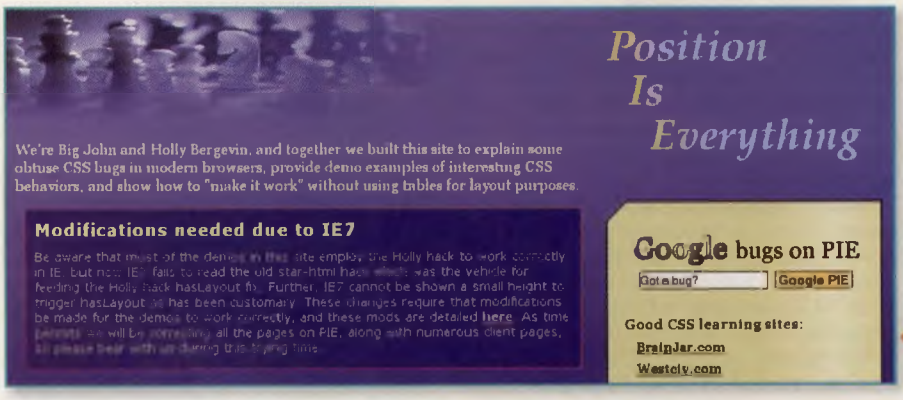
BROWSER DETECTION

Conditional comments were introduced in IE5 and have been supported since. They are HTML comments embedded in the markup of your page. IE reads these comments while other browsers ignore them. Simply, conditional comments help you detect which browser is being used. Here's a quick example:

```
<!--[if IE]>
<p>You are using Internet Explorer.</p>
<![endif]-->
```

For your browser to display the HTML enclosed within the comments above, it needs to be running IE and only IE, version 5 upwards. All other browsers ignore the HTML. You can specify which version of IE, up to four decimal places:

```
<!--[if IE 5.0025]>
```


Position Is Everything
We're Big John and Holly Bergevin, and together we built this site to explain some obtuse CSS bugs in modern browsers, provide demo examples of interesting CSS behaviors, and show how to "make it work" without using tables for layout purposes.
Modifications needed due to IE7
Google bugs on PIE
Got a bug?
Google PIE
Good CSS learning sites:
BrainJar.com
Westciv.com

Position is Everything (*www.positioniseverything.net*) keeps tracks of CSS bugs and exclusions in all the main browsers.

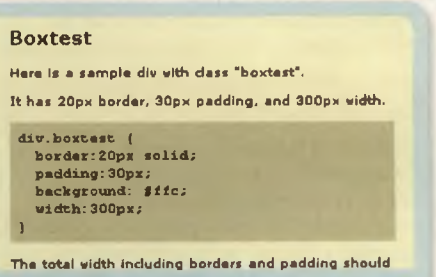
SPOTLIGHT ON... CSS FILTERS

CSS filters are a cross-browser alternative to condition comments. They exploit the idiosyncrasies of the targeted CSS implementation. The "attribute selector" hack is used to hide CSS rules or content from IE6 and below. It works because IE6 doesn't support attribute selection. We use an attribute selector in the body of a CSS rule to hide a PNG image from IE6:

```
div[id="content"] {
background-image:
url(background.png)
}
```

The most widely used examples of CSS filter hacks are those by Tantek Celik (**http:// tantek.com/CSS/Examples**), a series of filters that allow you to target Internet Explorer 5, 5.5 and 6.

Although many of the bugs and exclusions that these hacks exploit have been corrected in IE7, it's reported that they're often read by IE in unexpected ways. While Firefox, Opera and other standards-compliant browsers simply ignore them, it seems that IE7 breaks when encountering some of these legacy filters. Ironically, a quick and easy way to stop this happening would be to precede them with a conditional comment preventing IE7 from accessing them in the body of your code.



Tantek Celik's Box Model Hack — one of the first CSS filters released — fixes IE5 and 5.5's rendering of CSS block widths.

```
<p>You are using Internet Explorer for Windows 2000, beta 3</p>
<![endif]-->
```

This only displays the specified content in one version of IE. You can add multiple conditional comments to detect multiple browser versions; stack the comments up after each other:

```
<!-[if IE 5]>
<p>You are using Internet Explorer 5. It's about time you upgraded.</ p>
<![endif]-->
<!-[if IE 6]>
<p>You are using Internet Explorer 6. There's a newer version available.</p>
<![endif]-->
<!-[if IE 7]>
<p>You are using Internet Explorer 7. Aren't you clever?</p>
<![endif]-->
```

In programming, it's sometimes more useful to target a range of objects. Conditional comments allow for a series of "less than" and "greater than" operators. As the less and greater mathematical symbols are used as brackets in HTML, the operators are abbreviations instead:

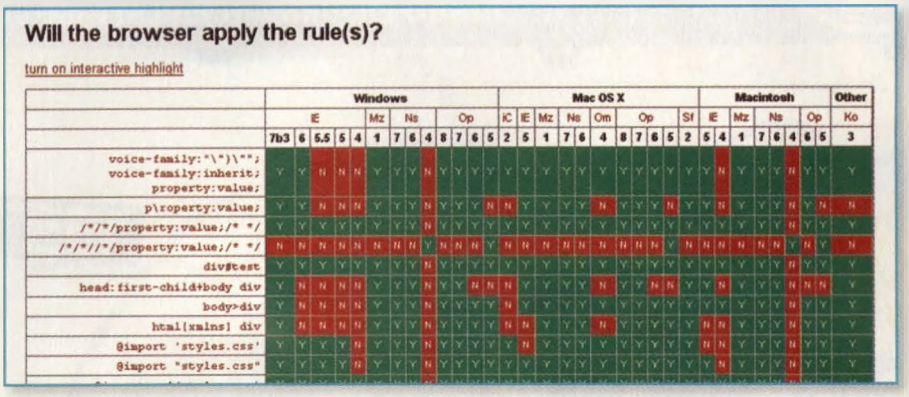
```
<!-[if lt IE 6]>
<p>You are using a version of Internet Explorer older than 6.</p>
<![endif]-->
<!--[if gt IE 6]>
<p>You are using a version of Internet Explorer newer than 6.</p>
<![endif]-->
```

You can also use "lte" or "gte", meaning "less than or equal to" and "greater than or equal to". Although conditional comments are exclusive to Microsoft browsers and ignored by others, there's one final trick that lets you target browsers that aren't IE. The key's in the syntax.

```
<![if !IE]>
<p>This browser is not Internet Explorer.</p>
<![endif]>
```

Even though we said we would be avoiding hacks, this is sort of a hack. The first thing you should notice is that the two dashes "--" normally found in HTML comments are missing.

Nevertheless, IE still reads the conditional comments and proceeds according to the result it finds. In this case the NOT operator "!" is invoked. In natural English, the query is "if the browser is not IE, then show the following content".



It's far too complex to be an easy-to-decipher guide, but *http://centricle.com* charts support for specific CSS rules in IE, Mozilla, Netscape and Opera.

What good is this query if non-Microsoft browsers can't read it? That's where the hack comes in. Because of the missing dashes, other browsers ignore the comments altogether — parsing the HTML between them.

PRACTICAL USAGE

Armed with this knowledge, we can put it to use by selecting which browsers serve which CSS rules. The most standards-compliant method would be to create separate external style sheet documents for each set of conditions you need to meet. To get broad coverage, all you really need is one standards-based CSS 2.1-compliant document for IE7 and non-Microsoft browsers and one style sheet that's targeted at IE6 and under.

First, create a layout with an external standards-compliant style sheet and name it "styles.css". Test the layout in IE6 or below and identify what changes need to be made to the CSS to make the page look right in that browser. Remember, you're aiming for clean code. Add those changes to your CSS and save that version of the file with a different name. Next, add code to your page that loads the standards-based style sheet if the browser is IE7 or non-Microsoft.

To do this, we use a small hack that lets us target both IE7 and non-Microsoft browsers with the same code. This hack can be found at (**www.cssplay.co.uk**) and has been tested with IE7:

```
<!--[if IE 7]><!-->
```

```
<link rel="stylesheet" href="styles. css" type="text/css" />
<!--<![endif]-->
```

Directly below that, we add a line that points to the second CSS file:

```
<!--[if lte IE 6]>
<link rel="stylesheet" href="iestyles. css" type="text/css" />
<![endif]-->
```

You can also use comments to embed alternate CSS rules directly into your document. Using external CSS is more consistent with web standards though, separating form from content, meaning you can update your sites more easily after future changes to browsers. You'll still need to make direct edits to your HTML pages, should you need to add more comments, because they don't work in the body of external CSS files.

While there's an argument about the standards compliance of conditional comments, as long as IE supports them and is still the dominant browser in the market, they provide the most elegant solution for serving different content to different browsers.

DO THIS... TEST CONDITIONAL COMMENTS

Testing is a vital component of the web design process, and it's always been wise to try out your sites in multiple browsers. With the release of IE7, it's now imperative that you test your sites against earlier versions of the browser as well as Firefox and Opera. By default, a new install of IE overwrites previous installations. Even if you install the program files to a different directory, your old version of the browser is updated at the same time. Fortunately, there's a hack that allows you to host multiple versions of IE on the same box.

Install Internet Explorer 7 first, then go to **http://tredosoft. com/Multiple_IE** and download the Multiple IE Installer. This adds standalone versions of IE from version 3 right up to version 6.

There's one remaining problem — to get conditional comments to work, you'll need to change a registry key. Go to the Start menu and click Run, then type in "regedit". Click OK and find HKEY_LOCAL_ MACHINE\SOFTWARE\Microsoft\Internet Explorer\Version Vector.

Select the key and change its value from "IE" to "xIE". This forces each standalone to retrieve version information from the program rather than the registry, allowing conditional comments to work effectively.

SportCommand for iPod with Dock Connector

Plug the dongle into the base of your 'Pod, shove it into your backpack, or anywhere within 15m, and take control of your music. If you're anything like me, you'd be thinking: "but my headphone cable isn't 15m long?" But try jacking the iPod into some speakers if you have them and you can roam freely near your iPod with full control of the music. Biking, boarding, bricklaying or just bludging, the uses for the SportCommand are as limitless as iPod accessories. It's wireless, water-resistant and washable: great for when you're outside.

.: CONTACT	Belkin
.: ONLINE	www.belkin.com.au
.: PRICE	$129.95
.: VERDICT	★★★★☆

Rock Active Stereo Tube Speaker with LED Light Bar

Why have ordinary speakers when you can have something that looks like a futuristic hourglass? This bizarre-looking contraption plugs into your laptop or MP3 player and pumps your tunes out of its tiny shell, letting you enjoy Paula Abdul's *Shut Up and Dance* to the fullest. Given the small size, these would be handy if you're a student or like taking speakers with you to play your MP3s. We're not going to vouch for the sound quality — but hey, it's small, and you can use it as a conversation starter at Starbucks before they kick you out.

.: CONTACT	Anyware
.: ONLINE	www.anyware.com.au
.: PRICE	$39.95
.: VERDICT	★★★½☆

LaCie Hub

This must be the stuff of nightmares for traditional home styling gurus like Martha Stewart. It's actually a USB hub, but designed with the flexible USB cables sprouting like wild biomechanical fronds. There's four USB 2.0 cables, two FireWire 400 cables, a USB light and a USB fan. There's also a USB extension cable and a FireWire 400 extension. The bits we like are the glowing LEDs which tell you when a device is plugged in. If this fits in with your home décor, then give yourself a pat on the back.

.: CONTACT	LaCie
.: ONLINE	www.lacie.com/au/
.: PRICE	$109
.: VERDICT	★★★★☆

Adobe Photoshop Elements 5: Unleash the Hidden Performance of Elements

Maximum Performance? We *are* talking about digitally enhancing photos, right? Sure, if you parachuted out of a helicopter onto the peak of a snow-capped volcano with a snowboard strapped to your feet, carving a righteous path down the aforementioned volcano: now *that* would be maximum performance. Of course, on your triumphant return no-one would believe you, so you'd need a photographer. With the tips and tricks of the pros, five hours of video tutorials, multi-layered project files *et al*., you'll know how to make those shots look great.

.: CONTACT	Elsevier
.: ISBN	9780240520483
.: PRICE	$57.95
.: VERDICT	★★★½☆

Belkin Easy Transfer Cable for Windows Vista

It's a cable, and it costs almost $100 — surely a cruel joke being played on unsuspecting PC owners? No, it's real, and before you start swearing into your muesli at the sheer audacity of it, keep in mind this could be a handier than you first think. The cable connects an old XP PC to your new Vista machine via the USB ports and automatically triggers the Windows Transfer Wizard to appear, which will move across your settings and files. We recommend you manually go checking for files this might miss, though — just in case.

CONTACT	Belkin
ONLINE	www.belkin.com.au
PRICE	$99.95
VERDICT	★★★½☆

Creative Xmod

It looks like a glorified volume knob, but the Xmod is actually a ticket into the world of X-Fi Xtreme Fidelity, which makes music so good, you'll be spouting the words "Awesome! Awesome to the max!" (or something similar) over and over again. Curiously, Creative claims the Xmod will up-convert MP3, WMA, iTunes or AAC during playback to 24-bit surround. It's also meant to make movies sound more like you've got a multi-channel stereo system installed. Finicky about your sound playback? Good: at $159.95 you'd want to be.

CONTACT	Creative
ONLINE	www.australia.creative.com
PRICE	$159.95
VERDICT	★★★½☆

USB Ashtray and Air Deodorizer

Sure, smoking heavily while playing WoW can add to the billowy, mysterious atmosphere, but it can't be healthy, which is where this incredibly kitsch USB gadget comes in. If you smoke, the little plastic thing on wheels (why a car, why?) will absorb smoke into its carbon filter using a fan. Personally, we're adding this to our list of cheesy USB gadgets, which now numbers cup warmers, mini-christmas trees, web cams in the shape of fluffy pets and other stuff you'll never, ever need. What's next? We're holding out for the USB toothbrush.

CONTACT	Anyware
ONLINE	www.anyware.com.au
PRICE	$16.90
VERDICT	★★★½☆

HAUL Laptop sleeves

Each HAUL laptop bag is completely unique, because they're made from decommissioned billboards. Yep, those ads for beer and home loans are made of tough, weather-resistant vinyl that looks completely awesome cut up and made into a laptop bag. Inside, they have light foam padding to protect your MacBook Pro, or — cough — Dell. At $94 they are quite exxy, but then, laptop accessories always are. HAUL also makes handbags out of numberplates and shoulder bags out of truck inner tubes.

CONTACT	Haul
ONLINE	www.urbanboomerang.com.au
PRICE	$94
VERDICT	★★★★☆

Surviving the Wii

Do the likes of the Nintendo Wii and Sony PlayStation 3 mean the end for PC games?

No. There. Hopefully that didn't hurt too much. There's never been a major console launch where this thorny old question didn't get dragged up, and this generation is no exception — but as ever, the PC will survive.

However, this time around we're seeing some important differences between the different systems. Rather than being stuck on the blurry, smeary TVs of old, consoles have learned the benefits of a good LCD screen. Whereas systems like the SNES and Sega Megadrive were happy to excel at one thing, modern systems want to be everything from media centres to web browsers — even the basic unit itself is subject to change and upgrades, with HD-DVD players bolted onto the top, expandable hard drives and additional programs purchased for a variably nominal fee. While consoles have always been computers, this is the first generation where they're really out to eat the PC's lunch in terms of their operation and range of functionality.

TECHNICAL TROUBLES

It's almost worrying how technical things have become. For the last year, Sony fans have been holding out for the PS3 based on almost everything but the actual games — talk of cell processors and texture memory buffers easily drowning out the hype over games like Metal Gear Solid 4 or Resistance: Fall of Man. Microsoft's supporters have been playing the same game, no pun intended, trumpeting developer quotes about their machine of choice being easier to code for, instead of talking up the existence of Gears of War and Viva Piñata (although not Dead Or Alive: Beach Volleyball, where attentions tended to be on other things). Only Nintendo has resisted the urge to get involved in this multi-billion dollar game of Top Trumps, murmuring vaguely about increases on the Gamecube hardware rather than officially releasing the specs of the Nintendo Wii, and putting all its focus on playing fun games.

It was a gamble, but one that easily paid off. Interviews with pre-order lines across the world showcased the number of opportunists purchasing PS3s at $600 with the aim of reselling them on eBay for $1,000, $1,500, $5,000, or more. Conversely, the majority of people polled in lines for the Nintendo Wii couldn't wait to get them home, tear off the wrapper, and start swinging around the motion-sensitive controller. Nintendo lags so far behind the others in terms of pure technology that its system doesn't even support HD resolutions, never mind mandate them — its next-generation kudos comes straight from its attempt to fundamentally change the nature of gaming from button mashing and joysticks into something more personal and interactive.

But what does all this mean for us, the PC gamers of the world? Ironically, things could hardly be better. Today's top-end console is next year's entry-level PC, and while the console world will always be able to claim exclusives like the new Grand Theft Auto or Metal Gear Solid, we'll usually end up seeing them after a short wait — patched, improved, and often boasting bonus content as an added incentive to buy in. In the case of most moderate franchises, we won't even have to wait.

The sheer cost of developing modern games makes relying on one console a risky bet for anything but the most hyped of titles. Instead of raw power, parts of the game like gameplay, art design, character and story have to take centre stage, because these are the things that can easily jump between platforms. None of which is a bad thing for gamers.

However, it's the console kids' turn to cheer; for the moment, they think they've got the edge. As PC owners, we're used to letting them have their little victories. But give it time, until graphics cards cycle a generation, and the next game like Half-Life sits proud in its rightful home, and we'll see exactly why our platform will survive. At least for a while longer.

Neverwinter Nights 2

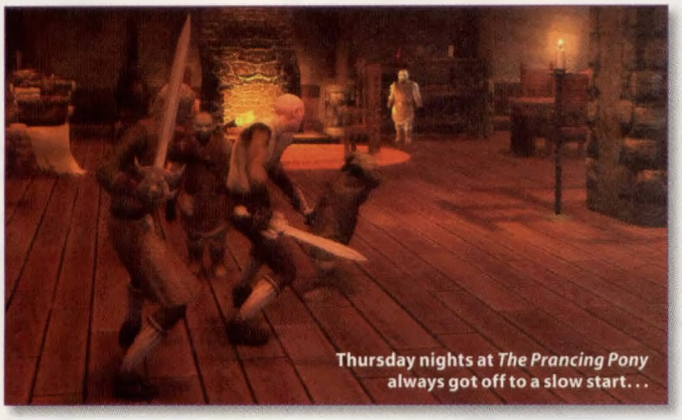
"We can dance if we want to / We can leave your friends behind..."

***Troy Coleman* dances with darkness in the Forgotten Realms.**

Created by founding members of Black Isle Studios (who also worked on Baldur's Gate), Obsidian Entertainment has been hard at work on this long-awaited, eagerly anticipated sequel.

Set in the Forgotten Realms, the story centres on the King of Shadows, an evil and powerful force that is once again gaining power and rallying forces in the North. Unhindered, this darkness could spell the end of the Forgotten Realms. Hope lies with you, when you discover an ancient artefact that may be evil's undoing.

Game play is adapted from Dungeons & Dragons. Dice rolls are used to decide outcomes, so this is no hack-and-slash-click-fest. Combat remains true to the turn-based rules of D&D, where players and AI characters take turns at attacking and defending — waiting for your turn can leave you doing some crazy medieval dance. A compelling plot with a playtime of around 50 hours is what gives this title its worth.



Thursday nights at *The Prancing Pony* always got off to a slow start...

Navigating the menus has been refined: everything from accessing your journal, casting fireballs or organising your ample inventory is within two mouse clicks. WASD or point-and-click movement will get you where you need to go, but seeing where you need to be is another thing. Camera views are difficult to use and a constant frustration.

The game engine has had an overhaul to support features like fully dynamic lighting and shadow maps. But even with this new engine and all features set to maximum, the graphics still fall short in the awesome department.

The real appeal and the feature that will secure the game's longevity is the toolset. Essentially, it's an interface which gives you the ability to create campaigns for yourself or the NWN community to play. (And there are already modules available for download or to play online.)

CONTACT	Obsidian Entertainment
ONLINE	www.nwn2.com
PRICE	$89.95
✔	Epic plot; toolset.
✖	Camera views; combat.
VERDICT	★★★☆☆

Medieval II Total War

***Orestis Bastounis* woos the ladies with some chainmail armour.**

Many RTS games are marred by a way of ensuring easy victory through domination of the economic elements of the game, without needing to apply any good battle tactics. Medieval II offers a refreshing change, emphasising battlefield tactics rather than building and harvesting resources. Unlike the normal chain of missions, you have to master two distinct modes of play: a real-time battlefield view for commanding your troops, and a turn-based campaign map, where you set taxes, recruit troops and move your armies.

Historical accuracy has always been important to the series, with politics and emerging technology crucial to your battles. Everything looks as good as a real battlefield — the generic unit models of the last games replaced by units with varying features, motion-captured animations and far more detail than earlier games. Wider-afield, victory in battle is only part of it; your empire has to deal with outside influences such as the Pope, as well as witness the rise of gunpowder as the main weapon of war. Most important of all though, outnumbering your opponent is rarely a guarantee of victory. With good planning, a skilled general can defeat a much bigger army.

Morale is key: once your general falls, the battle is effectively lost. Units rout before they're completely killed, and forcing your opponents to rout is as good as killing them off one at a time. Sadly, this won't always be because of great playing skill. All too often, enemy armies do stupid things, such as charge... then stand about to enjoy the incoming rain of arrows. Still, at least the incompetence is fairly shared — expect to see your own troops choose bizarre routes to their destinations on occasion, even if the trip guarantees their painful death. Aside from these issues, thankfully absent in multiplayer, Medieval II Total War is great exercise for your grey matter.

CONTACT	THQ
ONLINE	www.totalwar.com
PRICE	$99.95
✔	Great graphics; tactics enhance gameplay.
✖	Poor AI.
VERDICT	★★★★☆

the seven year itch

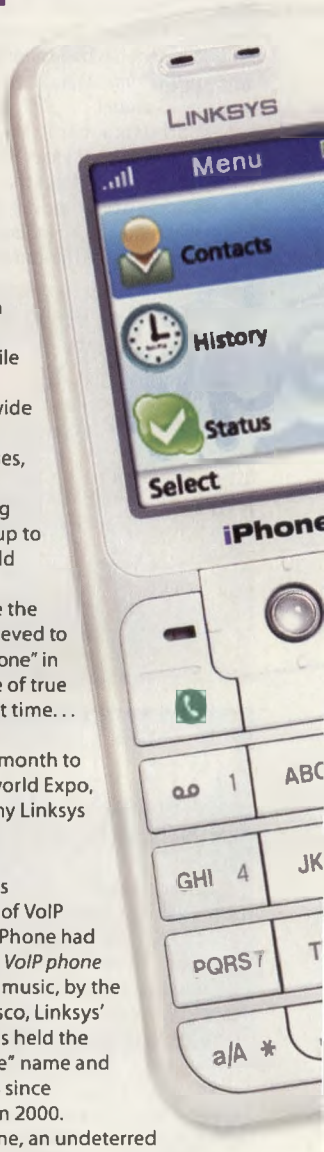
They say that a rolling stone gathers no moss. I'm not exactly sure what that really has to do with anything here... suffice to say that this month's *APC* represents the final issue to be published from Stockland House (on Castlereagh Street, Sydney), which has been our home for the past seven years. We're heading southwards a few blocks to *APC*'s new residence at Civic Towers. So yep, you guessed it: it's moving time. The relocation seemed like a pretty reasonable proposition all round until we remembered... *the Labs*. Seven years' worth of Labs Challenges, Roundups, product reviews, testing equipment and world record attempts. Let's just say that it all adds up — as you can see from these pics. Sheesh — I guess it's time to roll up our sleeves and see if we can get our bond back...

SUPER SMASH BROS.

Nintendo's latest console, the Wii, has certainly proved to be a smash, hasn't it? (Puns, in case you weren't quite sure, absolutely and eagerly intended — this *is* Chip Chat, you know). The innovative gaming machine has broken records all around the world, becoming the fastest-selling games console ever in several international markets including Australia, Europe and the UK. However, records and sales targets aren't the only things being broken. Due to the Wii's unique controller setup, which sees players swinging the wireless Wii Remote around their living rooms in order to control the onscreen action, purchasers worldwide are reporting smashed TV screens, broken windows and damaged walls, furniture and household ornaments (not to mention all the injuries sustained by friends and family). Online sites like **wiihaveaproblem.com** tally the destruction, while Nintendo has responded with the promise of new, thicker wrist straps. Don't say Wii didn't warn you.

IMAGES: wiihaveaproblem.com

iSurprise surprise!



It'd been the talk of the gadget community for the past year: Apple's "iPhone", said to be the convergence device we were all waiting for. All the sleekness of an iPod plus the one, true must-have tech tool of the early 21st century: a mobile phone.

Mac fans worldwide had been drooling about the possibilities, with the fever of anticipation building steeply in the lead-up to Steve Jobs' Macworld 2007 keynote presentation, where the CEO was widely believed to be unveiling the "iPhone" in front of an audience of true believers for the first time... but not so!

With less than a month to go before the Macworld Expo, networking company Linksys beat Apple to the punch with the announcement of its own "iPhone family of VoIP solutions". Yes, the iPhone had arrived, and it was a *VoIP phone* (which doesn't play music, by the way). It turns out Cisco, Linksys' parent company, has held the rights to the "iPhone" name and trademark in the US since acquiring Infogear in 2000.

Not to be outdone, an undeterred Jobs took to the stage at Macworld '07 and proceeded to nonetheless reveal... the iPhone! (See news story, page 8). It seems Apple wasn't about to let Cisco spoil the party, bullishly soldiering ahead with its own plans for those precious six letters of the alphabet.

It transpires that the companies had been in negotiations over the name, although Cisco is now suing Apple for trademark infringement (not new territory for Apple, which has famously been embroiled in litigation over the years with Apple Corps Ltd, the corporation founded by the Beatles). And so, what exactly does fate hold in store for the "iPhone"? Tomorrow never knows. apc

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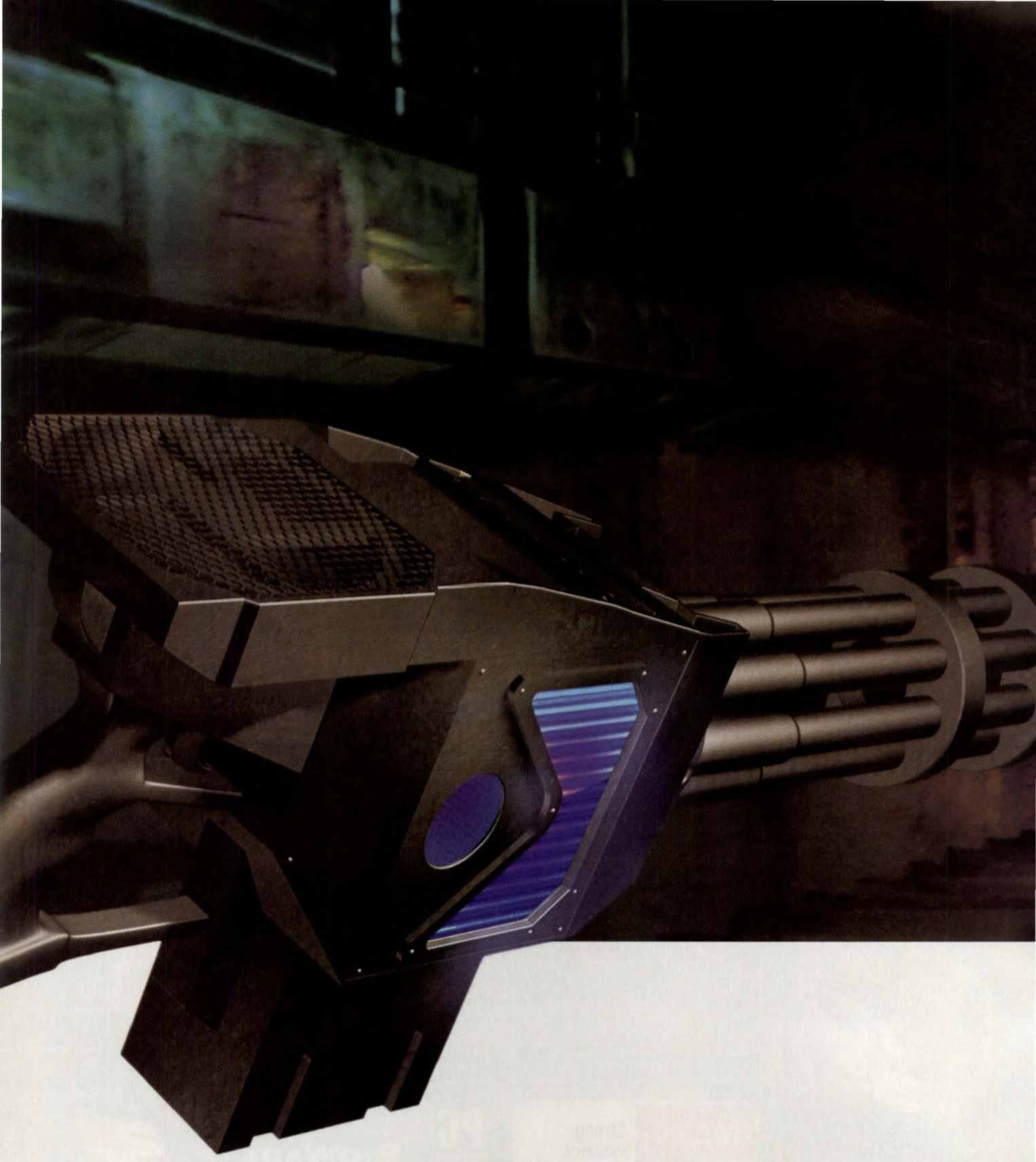

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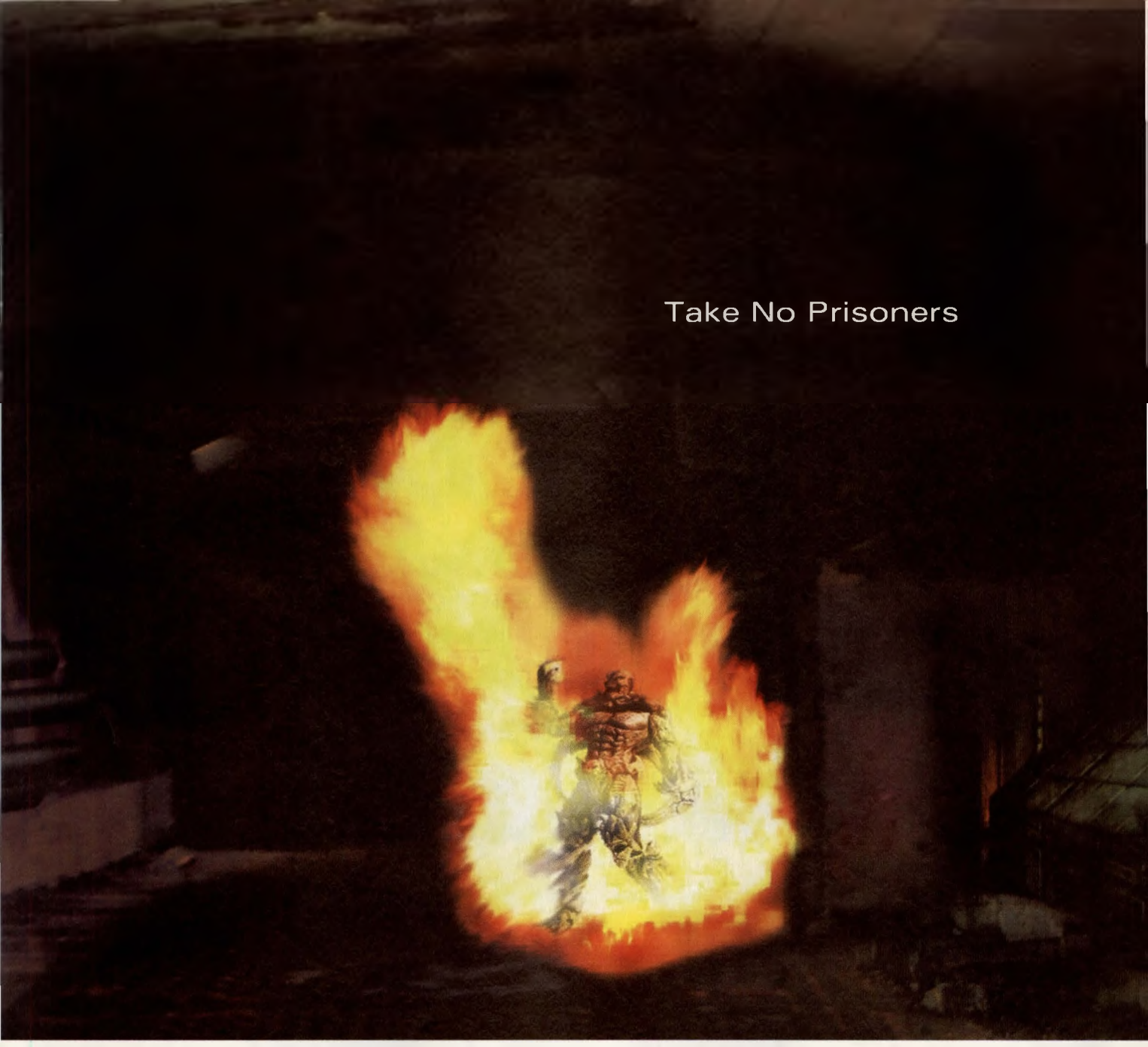

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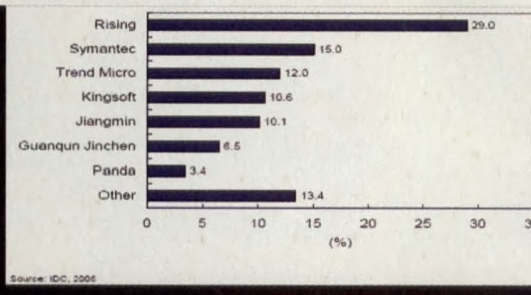

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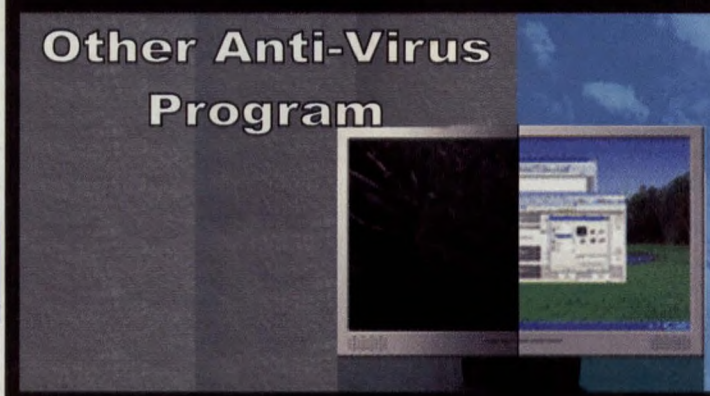

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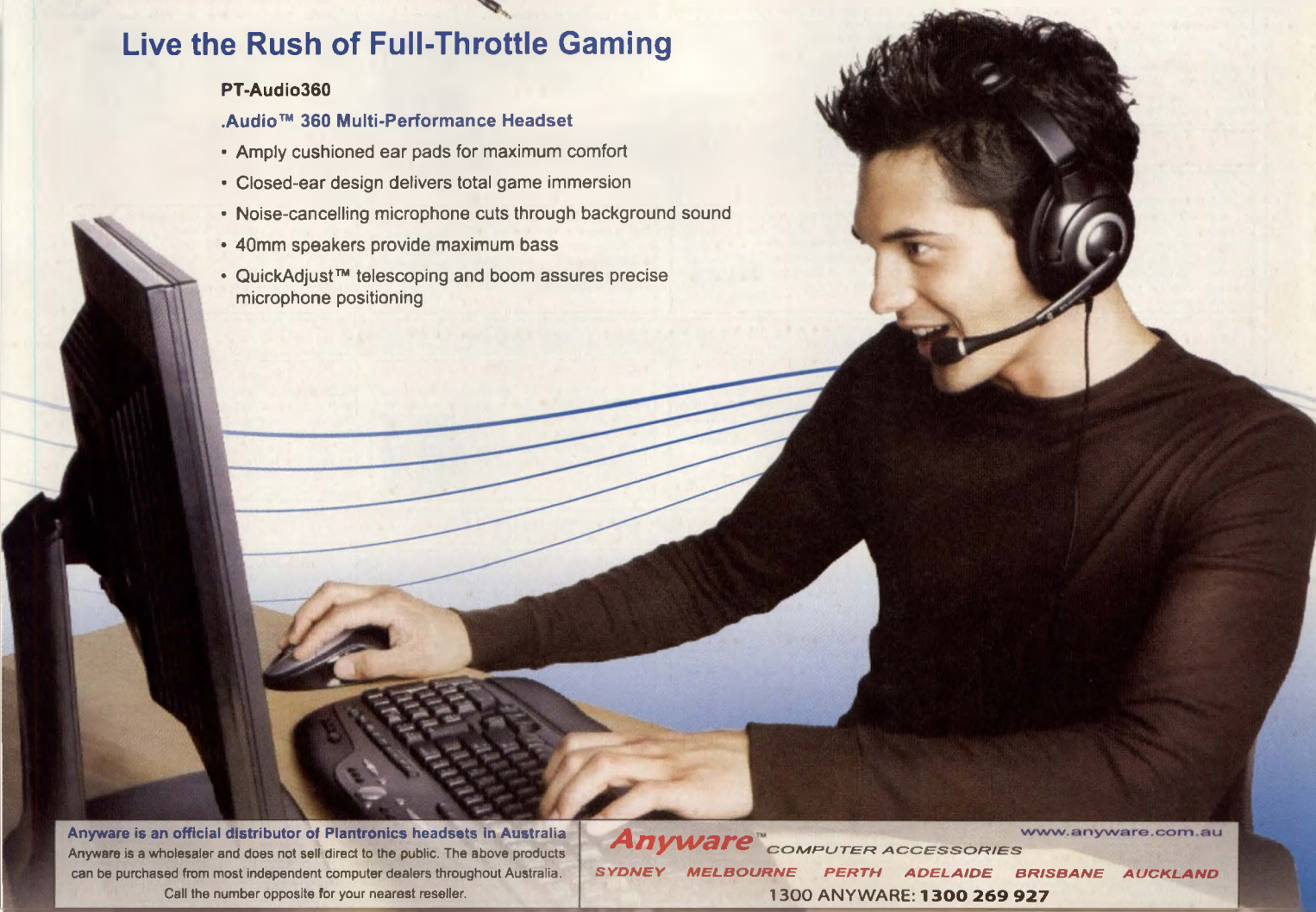

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HANDSET CONNECT model

NEW

CRU3 is designed to connect to any PABX, COMMANDER, PSTN or VOIP handset. Will then provide High Quality telephone call recording to your PC (PC software provided). Automatic operation with start/stop activation from your PC.

PROFESSIONAL model

NEW

CRU4 provides all facilities of the CRU2 Model (It connects to any handset) and in addition allows message(s), or previous recordings to be played back to the other party at any time. Allows notes to be tagged to the recording file.

AUTO DIGITAL ANNOUNCEMENT

NEW

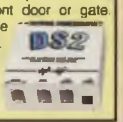
Our AUTOMATIC ANNOUNCEMENT DEVICE will ANSWER your incoming telephone calls, play an announcement and then resume ringing of your telephones. Ideal for announcing change of number or that the call will be recorded.

TELEPHONE LINE DOOR STATION SOLUTIONS

DOOR STATION UNIT

UPDATED

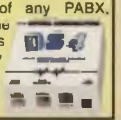
DS2 will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones. Operates on any ordinary single line or multi-line phone system. Requires surface mount or flush mount door phone.



PABX DOOR STATION UNIT

NEW

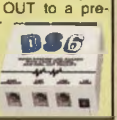
DS4 is designed to be connected to an analogue extension of any PABX, Commander or other multi line telephone system. DS4 goes "off hook" when activated by the door phone. Requires surface mount or flush mount door phone.



DOOR STATION DIAL OUT

NEW

Our New DS6 model will RING your telephones and then DIAL OUT to a pre-programmed telephone number if a visitor arrives and you are not home. Requires Surface Mount or Flush Mount Door Phone. Can also connect to a PABX extension.



DOOR PHONES

NEW

A range of door phones are available

SHARE YOUR LINES AND SAVE INSTALLATION & RENTAL CHARGE

FAXSTREAM DUET SWITCHES

NEW

Will allow any Fax or Modem device to operate with the Telstra FaxStream Duet service. Provides fully automatic fax reception, just like having a separate line. Two models are available.

INTELLIGENT FAXSWITCH

NEW

FAX SWITCH will allow your existing Fax Device to connect to any Single Telephone line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Fax operation. Will operate with all existing telephones and also an Answering machine.

INTELLIGENT MODEMSWITCH

NEW

MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.

EFTPOS SWITCH

NEW

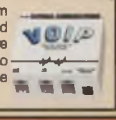
EFTPOS switch will allow your existing EFTPOS device to share any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialing. BARGE-IN protection prevents interference when line is in use. Alternative model will allow operation on 2 lines.

MISCELLANEOUS TELEPHONE LINE APPLICATIONS

VOIP SELECTOR

NEW

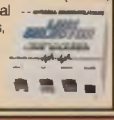
This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP LINE. Incoming calls from either line ring on the connected telephone(s). Outgoing calls are automatically DEFAULTED to ONE LINE, but the alternative line can be selected by DTMF code.



TWO LINE SELECTOR

UPDATED

Premium device will allow you to connect one Telephone Device to two Telephone lines (Telstra, Optus, VOIP, PABX etc). Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.



TELEPHONE CALL TRANSFER

Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.

MULTIPLE NUMBER SWITCH

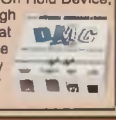
Operate Two numbers on one line. This device will connect your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.

TELEPHONE LINE ON HOLD SOLUTIONS

DIGITAL ON HOLD

UPDATED

DMS, Australia's Leading On Hold player, is an MP3 based Message On Hold Device, designed to provide the High Quality and High Reliability that is necessary for all telephone On Hold applications. Easy message change provided by replacing memory card.



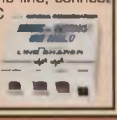
ELECTRONIC MESSAGE UPDATE

NEW

DMC is available with range of optional Automatic electronic message update methods including Email, Modem, FTP and Network IP. We have a National Network of Dealers ready to produce your customized message.

SINGLE LINE ON HOLD

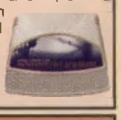
Just plug our MOH Line Sharer into any socket on your single telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional telephone line On Hold facility for your existing telephones.



AUTOMATIC CALL ATTENDANT

NEW

Our single line CALL ATTENDANT will answer your incoming calls after 4, 6 or 8 rings, play a greeting & then put your call on hold until you are able to answer. Also provides Message on Hold facility for your single line.



MISCELLANEOUS TELEPHONE LINE APPLICATIONS

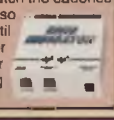
TELEPHONE LINE SIMULATOR

This TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunications equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.

RING INDICATOR

NEW

This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay until a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.



REMOTE TELEPHONE ACTIVATOR

Call in to Switch ON, Switch OFF or RESET your PC, SERVER or any electrical equipment by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.

POWER CONTROL UNIT

PCU connects direct to the RTA and also to your power socket to allow telephone line dial In switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.

DIGITAL AUDIO EQUIPMENT

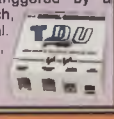
MESSAGE ON DEMAND

NEW

TDS can be programmed with up to 256 MP3 based messages stored on an MMC/SD card, which can be recalled and played by keypad entry or time programmed sequences.

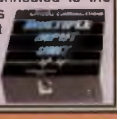
TALKING DISPLAY UNIT

TDU will play 1 or more pre-recorded messages as soon it is triggered by a movement sensor, a switch, or at a preset time interval. Ideal for Product Promotions, Product Information, Message Warnings etc.



MULTIPLE INPUT UNIT

MIU will allow for up to 12 separate movement sensors or switches to be connected to the TDU. Each sensor triggers its own unique message, output via any 8 ohm unpowered, powered or amplified speaker.



AUDIO SWITCHING UNIT

ASU will allow the TDU to be connected to any existing PA or Background Music system. The existing PA or Background Music system is then muted or faded whenever a TDU message is broadcast and then reconnected when finished.

30 DAY UNCONDITIONAL MONEY BACK GUARANTEE

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TP-Link 54M Wireless Networking Products

The 54M wireless range from TP-Link complies with the IEEE802.11g/b standards and adopts eXtended Range ™ WLAN transmission technologies. This results in transmission distances 2-3 times that of the normal 11b and 11g products and transmission ranges extended by 4-9 times.

TL-WR541G
54M Wireless Router with 4-Port Switch
RRP $65.00

TL-WN510G
54M Wireless PCMCIA Adapter
RRP $29.00

TL-WN550G
54M Wireless PCI Adapter
RRP $29.00

TL-WN321G
54M Wireless USB Adapter
RRP $29.00

TP-Link 108M Wireless Networking Products

The 108M wireless range from TP-Link complies with the IEEE802.11g/b standards and adopts Super 11G™ and eXtended Range™ WLAN transmission technologies. This results in transmission speeds of up to 108Mbps, transmission distances 2-3 times that of the normal 11b and 11g products and transmission ranges extended by 4-9 times.

pc world RECOMMENDS FEBRUARY 2006

TL-WR642G
108M Wireless Router with 4-Port Switch
RRP $79.00

TL-WN610G
108M Wireless PCMCIA Adapter
RRP $33.00

TL-WN651G
108M Wireless PCI Adapter
RRP $35.00

TL-WN620G
108M Wireless USB Adapter
RRP $40.00

Wireless Antennas – for use with the 108M networking range

TL-ANT2405C
2.4GHz 5dBi Indoor Omni-directional Antenna
RRP $19.00

TL-ANT2406A
2.4GHz 6dBi Indoor Yagi-directional Antenna
RRP $39.00

TL-ANT2409A
2.4GHz 9dBi Outdoor Yagi-directional Antenna
RRP $59.00

TL-ANT2414A
2.4GHz 14dBi Outdoor Yagi-directional Antenna
RRP $139.00

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Keyboards
TK-102 PS/2 $13.00
TK-103 USB $15.00

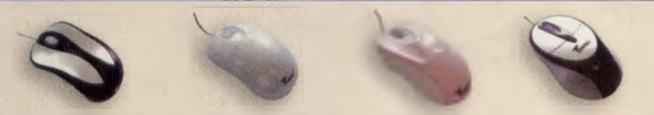
Wireless Optical Mouse

HM-5001 $19.00

USB Optical Mouse

HM-2026 $10.00 | HM-2029 $10.00 | HM-2014 $10.00 | HM-2008 $12.00

PS/2 or USB Optical Mouse



HM-2031 $10.00 | HM-2002 $12.00 | HM-2004 $12.00 | HM-2001 $10.50

USB Net Phone with Screen Display

- Selection of ring tones
- Built in hold function
- Displays contact list, dialled calls, incoming calls, missed calls, send voice email, skype out balance checking
- Quick buttons setting, audio message setting, language choice
- Plug and play, fully compatible with SKYPE
- LCD display screen

PD-250 $38.00

USB Net Phones

- Supports Skype, Net2Phone, MSN, SJ Phone, X-LNE and more
- With keypad and ringer, crystal clear sound effect
- USB1.1 compatible – no external power required
- PC to PC and PC to Phone operation
- Function support: adjustable volume, page turning and contact lists

PD-222 $38.00 PD-227 $19.00

USB Car Charger

- Multi-function USB car charger, 4 USB ports and 1 DC port, can be charge for most products
- DC 12V-24V of the car will transform into 6V-7V
- DC port is used for various serial mobiles such as Nokia, Samsung, Motorola, Sony Ericsson

PD-100 $10.00

IPOD Car Charger

- Works with 12V auto cigarette lighter
- Circuitry design protects your iPod from overcharging and short-circuiting
- Charge and listen to your iPod at the same time
- Comes with a fully retractable and white coil cord

PD-160 $10.00

Negative-ion Generator

- Creates ions and puts them into air and by removing mildew, dust and smoke to improve air quality
- Increase the concentration of negative ions in the air and produces trillions of the ions per second

PD-080 $15.00

USB Portable Floppy Drive

$29.00

USB 2.0 + 1394 Combo 3.5" HDD Case

$38.00

SATA External HDD Case

2.5" $23.00
3.5" $38.00

Internal 3.5" Card Reader

- Easy front panel access
- USB 2.0 multicard reader with one front panel USB 2.0 from MB
- Black or Beige available

$13.50

Internal 5.25" Card Reader

- Easy front panel access
- USB 2.0 multicard reader with 6.1CH audio port from MB
- 2 x USB 2.0 port from MB
- 1 x 1394 port from MB
- Available in silver

$23.00

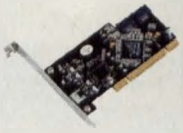
PCI USB 2.0 Card

4-Port $15.00

PCI Firewire Card

4-Port $18.00

SATA PCI Card



2-Port $23.00

PCMCIA 10/100 Lan Card

$20.00

PCMCIA Card

Firewire $32.00
USB 2.0 $32.00

Notebook Cooler Pad

Twin fan
$20.00

Tri fan
$29.00

USB Sound Card

$10.00

USB to RJ45 Network Adapter

$16.00

USB 2.0 External HDD Case

2.5" $15.00
3.5" $25.00
5.25" $48.00

24 in 1 USB 2.0 Card Reader

$15.00ea

USB Fan, USB Light

$15.00ea

1 x White LED, 1 x Red Laser Diode 1 x PDA Stylus Pen

$2.30

Notebook Combination Lock

$10.00

Slimline Clam CD Cases

10PK
$2.50

CD Sleeves

Saves storage space

100PK
$3.50

CD Case

40PCS $3.90
80PCS $4.90
128PCS $8.90

Stereo Headphone

Built in microphone
Ideal for gaming

$15.00

USB Bluetooth Adaptor

30m $26.00
100m $29.00

4-Port USB Hub

USB 1.1 $8.50
USB 2.0 with power supply $18.00

USB to PS/2 Splitter Cable

$10.00

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A4 (210 x 297mm)...$12.90 TPP1811

Premium Glossy Paper
- 256gsm
- 20 sheets

A6 (105 x 148mm)...$ 6.90 TPP2846
A4 (210 x 297mm)...$16.90 TPP2811

Canon Ink Cartridges

TOP BUY PC USER JUNE 2005
Rated 9 out of 10 by PC User

Model	Genuine	TONNY
BCI-24BK	$14.00	$5.60
BCI-24C	$33.00	$7.20

Model	Genuine	TONNY
BX-3	$49.00	$28.00
BC-02	$39.00	$28.00
BC-03	$38.00	$28.00
BC-05	$50.00	$30.00
BC-20	$49.00	$28.00
BCI-3eBK	$25.00	$ 8.80

Model	Genuine	TONNY
BCI-3eC/M/Y	$19.00	$6.40
BCI-6BK	$24.00	$6.40
BCI-6C/M/Y	$24.00	$6.40
BCI-6G	$24.00	$6.40
BCI-6R	$24.00	$6.40
BCI-6PC/PM	$24.00	$6.40

Model	Genuine	TONNY
BCI-15BK	$24.00	$6.40
BCI-15C	$44.00	$7.20
BCI-16C	$44.00	$7.20
BCI-21BK	$13.00	$4.90
BCI-21C	$28.00	$6.40

NEW! Canon Models

Model	Genuine	TONNY
PGI-5BK	$22.50	$8.50
CLI-8BK	$22.50	$8.50
CLI-8C/M/Y	$22.50	$8.50
CLI-8PC	$22.50	$8.50
CLI-8PM	$22.50	$8.50

Epson Ink Cartridges

Model	TONNY	Model	TONNY	Model	TONNY
T001	$18.90	T038	$ 9.60	T0561/2/3/4	$8.90
T003	$ 9.90	T039	$10.60	T5591/2/3	$8.90
T005	$18.00	T0321	$10.80	T5594/5/6	$8.90
T007	$ 9.30	T0322	$ 7.50	T0621	$8.90
T008	$13.00	T0323	$ 7.50	T0631/2/3/4	$7.50
T009	$15.00	T0324	$ 7.50	S020089	$9.90
T013	$ 4.50	T0422C/M/Y	$ 9.50	S020093	$5.10
T014	$ 7.90	T0461	$ 8.90	S020097	$9.00
T017	$ 9.70	T0472/3/4	$ 8.90	S020108	$6.50
T018	$10.60	T0491/2/3	$ 8.90	S020110	$9.50
T026	$ 9.70	T0494/5/6	$ 8.90	S020187	$5.10
T027	$12.40	T0540/1/2	$ 8.90	S020189	$6.50
T028	$ 9.70	T0541/2/3/4	$ 8.90	S020191	$9.00
T029	$10.60	T0547/8/9	$ 8.90	S020193	$9.50

HP Ink Cartridges

Model		Genuine	TONNY
51625A	(#25)	$46.00	$28.00
51626A	(#26)	$46.00	$28.00
51629A	(#29)	$46.00	$28.00
51633MA	(#33)	$41.00	$32.00
51645A	(#45)	$46.00	$24.00
51649A	(#49)	$48.00	$28.00
C1823D	(#23)	$51.00	$30.00
C4841/2/3/4AA	(#10)	$46.00	$28.00
C4836/7/8A	(#11)	$48.00	$18.00
C5010DA	(#14)	$47.00	$26.00
C5011DA	(#14)	$35.00	$24.00
C6578D	(#78)	$51.00	$30.00
C6614A	(#20)	$44.00	$24.00
C6615DA	(#15)	$44.00	$24.00

Model		Genuine	TONNY
C6625A	(#17)	$48.00	$30.00
C6656AA	(#56)	$32.00	$24.00
C6657AA	(#57)	$51.00	$32.00
C6658AA	(#58)	$37.00	$26.00
C8727A	(#27)	$31.00	$24.00
C8728AA	(#28)	$35.00	$26.00
C8765WA	(#94)	$31.00	$27.00
C8767WA	(#96)	$42.00	$33.00
C9363WA	(#97)	$45.00	$36.00
C8721WA	(#02)	$28.00	$16.00
C8771/2/3WA	(#02)	$16.00	$11.00
C8774/5WA	(#02)	$16.00	$11.00
C9351AA	(#21)	$24.00	$21.00
C9352AA	(#22)	$27.00	$23.00

Brother Ink Cartridges

Model	Genuine	TONNY
LC-21BK	$30.00	$7.90
LC-21C/M/Y	$17.00	$7.50
LC-02BK	$21.00	$7.90
LC-02C/M/Y	$11.00	$7.50
LC-04BK	$28.00	$7.90
LC-04C/M/Y	$16.00	$7.50
LC-47BK	$32.00	$7.90
LC-47C/M/Y	$18.50	$7.50

Model	Genuine	TONNY
LC-800BK	$32.00	$7.90
LC-800C/M/Y	$18.50	$7.50

Ink refill kits for Canon, Lexmark, HP and Epson from $4.90

Lexmark Ink Cartridges

Model	Genuine	TONNY
12A1970	$48.00	$32.00
12A1980	$56.00	$35.00
17G0050	$46.00	$32.00
17G0060	$53.00	$35.00
13400HC	$53.00	$36.00
13619HC	$52.00	$38.00
10N0217	$33.00	--
10N0227	$35.00	--

Model		Genuine	TONNY
10N0016	(#16)	$46.00	$36.00
10N0026	(#26)	$49.00	$39.00
15M0120	(#20)	$53.00	$41.00
18C0031	(#31)	$43.00	$35.00
18C0034	(#34)	$43.00	$35.00
18C0035	(#35)	$45.00	$37.00
18L0032	(#82)	$47.00	$39.00
18L0042	(#83)	$53.00	$41.00

HP Black Toner Cartridges

Model	Genuine	TONNY
92298A	$139.00	$ 65.00
C3906A/F	$ 95.00	$ 49.00
C3903A	$120.00	$ 59.00
C3909A	$220.00	$ 95.00
C4092A	$ 87.00	$ 49.00
C4096A	$135.00	$ 65.00
C4127A	$145.00	$ 65.00
C4127X	$169.00	$ 80.00
C4129X	$210.00	$ 95.00
C4182X	$239.00	$135.00
C7115A	$ 89.00	$ 49.00
C7115X	$115.00	$ 65.00

Model	Genuine	TONNY
C8061X	$165.00	$ 85.00
Q1338A	$189.00	$ 95.00
Q2612A	$ 95.00	$ 59.00
Q2613A	$ 95.00	$ 59.00
Q2613X	$125.00	$ 69.00
Q2610A	$155.00	$ 75.00
Q2624A	$ 96.00	$ 59.00
Q5942A	$190.00	$ 95.00
Q5942X	$279.00	$125.00
Q5949A	$ 99.00	$ 59.00
Q5949X	$169.00	$ 75.00
Q6511A	$169.00	$105.00

TONNY Colour Toner Cartridges

Printer Model	Model	Genuine	TONNY
HP LJ1500/2500, Canon LBP2410	C9700A (BK)	$115.00	$ 65.00
	C9701/2/3A (CYM)	$135.00	$ 79.00
HP LJ4600	C9720A (BK)	$199.00	$155.00
	C9721/2/3A (CYM)	$262.00	$185.00
HP LJ4500, Canon LBP2460/2040	C4191A (BK)	$119.00	$ 59.00
	C4192/3/4A (CMY)	$165.00	$ 69.00
HP LJ8000	C4149A (BK)	$150.00	$ 89.00
	C4150/1/2A (CMY)	$225.00	$155.00
Epson C900/1900	S050100 (BK)	$ 99.00	$ 79.00
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Epson C1000/C2000	S050033 (BK)	$119.00	$ 90.00
	S050034/5/6(CMY)	$249.00	$119.00

Samsung Toner

Model	Genuine	TONNY
ML-1210D3	$ 94.00	$ 59.00
ML 1650D8	$185.00	$105.00
ML-1710D3	$ 98.00	$ 59.00
ML-2010	$103.00	$ 59.00
ML-2150D8	$185.00	$140.00
ML-4100D3	$ 99.00	$ 83.00
ML-4500D3	$119.00	$ 73.00
ML-6060D6	$155.00	$ 93.00
SCX-4216D3	$ 99.00	$ 69.00
SCX-5312D6	$ 95.00	$ 79.00
SF-5100D3	$ 89.00	$ 59.00

Brother Toner Cartridges

Model	Genuine	TONNY
TN-100	$ 29.00	$23.00
TN-200	$ 42.00	$23.00
TN-2025	$ 74.00	$59.00
TN-300	$ 42.00	$23.00
TN-3060	$125.00	$65.00
TN-8000	$ 43.00	$23.00
TN-6600	$ 99.00	$65.00
TN-7600	$125.00	$65.00

Canon Toner Cartridges

Model	Genuine	TONNY
EP-22	$ 99.00	$49.00
EP-25	$ 99.00	$49.00
EP-26	$109.00	$69.00
EP-32	$145.00	$65.00
EP-52	$185.00	$80.00
E-31	$189.00	$85.00
FX-3	$132.00	$59.00
CART-303	$ 83.00	$59.00
CART-U	$ 99.00	$69.00

Epson Toner Cartridges

Model	Genuine	TONNY
EPL-5700	$190.00	$49.00
EPL-5900	$205.00	$49.00
EPL-6200	$215.00	$49.00

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Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E210	$129.00	$59.00
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Optra E/E+	$135.00	$59.00
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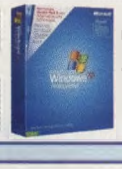

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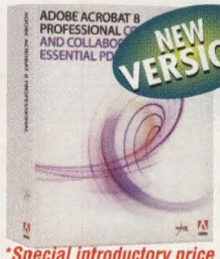

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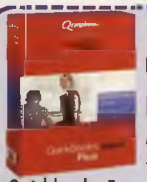

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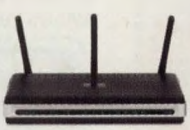

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TN6600	$65
TN7600	$85

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EP25	$55
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Epson Compatible Inkjet :

T007/008/T009	$ 8.00/$10.00/$12.00	T0491-T0496	$ 7.50 ea
T026/T027	$ 8.00/$10.00	T0561-T0564	$ 7.50 ea
T028/T029	$ 8.00/$10.00	T0540-T0549	$ 7.50 ea
T038/T039	$ 8.00/$10.00	T0621/T0631-T0634	$ 8.50/7.50ea
T0321-T0424	$ 7.50 ea	T-5591-T-5596	$ 8.50 ea
T0461-T0474	$ 7.50 ea	T0751-T0754(D.Vol)	$ 8.50 ea New
T050/T051	$ 5.00 ea	T052/T053	$ 8.50 ea

HP Remanufactured Inkjet : New

51629A (#29)	$ 24.00	C5010D/C5011D	(#14)	$25.00/$23.00
51645A (#45)	$ 24.00	C4814A-4817A	(# 13)	$24.00 ea
51649A (#49)	$ 26.00	C4844A-C4838A	(#10/#11)	$30/$27.00 ea
C6625A (#17)	$ 30.00	C4841A-C4843A	(#10)	$27.00 ea
C8727A (# 27)	$ 25.00	C8721W-C8775W	(# 02)	$16.00/$10.00
C8728A (# 28)	$ 28.00	C9396A-C9393A	(# 88)	$32.00/$24.00
C6656A (# 56)	$ 24.00	C6578 (#78) /	C1823D (# 23)	$30.00
C6657A (# 57)	$ 30.00	C6615 (#15) /	C6614A (# 20)	$24.00
		C8767WA (#96) /	C9363WA (#97)	$32.00/$35.00 New

Brother Compatible Inkjet: New

LC 57 Bk & Colour	$ 18.00/$12.00
LC 47 Bk & Colour	$ 7.50/$7.00
LC 800 Bk & Colour	$ 7.50/$7.00
LC 21/04/02 Bk & Colour	$ 7.50/$7.00

Refill Kits(30ml)-$6.50 & Bulk Ink(100ml)-$12.00

Canon	- 5 Colour	(PGI-5Bk/8Bk/8C/8M/8Y)(PG-40/50, CL-41/51)
HP	- 4 Colour	(CMYK)
Lexmark	- 4 Colour	(CMYK)
Epson	- 6 Colour	(CMYK+LC+LM)

HP/Canon Black Toner Cartridges-Rem:

HP-92274A / Canon-EPP	$ 55.00	HP-Q2624A	$ 55.00
HP-92298X / Canon-EPE	$ 70.00	HP-Q5942X	$125.00
HP-C3903A / Canon-EPV	$ 55.00	HP-Q5949X	$ 75.00
HP-C3906A / Canon-EPA	$ 48.00	HP-Q6511X	$120.00
HP-C4092A / Canon-EP-22	$ 48.00	Canon-EP-26/Cart-U	$ 65.00
HP-C4096A / Canon-EP-32	$ 62.00	Canon-E-31	$ 80.00
HP-C4127X / Canon-NP-52	$ 75.00	Canon-FX3	$ 50.00
HP-C4129X / Canon-NP-62	$ 90.00	Canon-FX-4	$ 60.00
HP-C4182X	$120.00	Canon-FX-7	$ 75.00
HP-C7115X / Canon-EP-25	$ 60.00	Canon-FX-9	$ 75.00
HP-C8061X	$ 83.00	Canon-Cart N	$ 88.00
HP-Q2612A	$ 50.00	Canon-Cart W	$ 77.00
HP-Q2613A	$ 55.00	Canon-Car 303	$ 55.00

Colour Toner Cartridges-Rem : (Each) (1 Set)

HP 3500	(Q2670A-Q2673A)	$135.00	$500
HP 2550	(Q3960A-Q3963A)	$100/$110	$400
HP 8500/8550	(C4149A-C4152A)	$ 90/$150	$500
HP 4500/LBP-2040	(C4191A-C4194A)/EP-83	$ 70/$85	$300
HP 4500/LBP-2040	Drum Unit C4195A	$120.00	N/A
HP 2500/LBP-2410	(C9700A-C9703A)/EP-87	$ 80/$95	$350
HP 4600/4650	(C9720A-C9723A)	$150/$180	$590
Epson C900/C1900	(S050100/97/98/99))	$ 80/$110	$380
Epson C1100/N	(S050190/187/188/189)	$ 80/$120	$400
Samsung	CLP-500B/C/M/Y	$120	$420

Brother Black Toner Cartridges-Rem:

TN-2025		$ 55.00	TN-3060	High	$ 63.00
TN-6600	High capacity	$ 63.00	TN-7600	High	$ 63.00
TN-8000		$ 20.00	TN-3185	High	$ 75.00 New
DR3000/DR6000/DR7000(Drum)		$105.00	DR8000	(Drum)	$120.00

Lexmark Inkjet/Toner Cartridges-Rem:

10N0016(# 16)-Bk	$ 33.00	10N0026(# 26)-Col	$ 36.00
12A1970(# 70)-Bk	$ 30.00	12A1980(# 80)-Col	$ 34.00
X215	$ 65.00	E210	$ 65.00
E230/330/332 (H.Yield)	$85.00	E310/E312 (H.Yield)	$ 80.00
Optra E+ (69G8256)	$ 50.00		

Samsung Inkjet/Toner Cartridges-Rem:

ML-1210D		$ 65.00	ML-1610D/2010D	$ 65.00
ML-1710D		$ 65.00	SCX-4100	$ 65.00
ML-2250		$ 85.00	SCX-4216	$ 65.00
ML-5200		$ 85.00	ML-4500D	$ 70.00
Ink- M40	(SF-330/331/335/341)	$ 35.00	SF-5100D	$ 60.00

Epson Black Toner Cartridges-Rem:

EPL-5700/5700L		S050010	$ 65.00
EPL-5900/5900L/6100		S050087	$ 65.00
Drum (EPL-5700/5900/6100)		S051055	$ 80.00
EPL-6200		S050166	$ 70.00

Panasonic Black Toner Cartridges-Rem:

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UG-3309	UF-744/788	$110.00

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Issue 03/07

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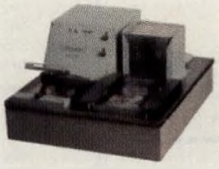

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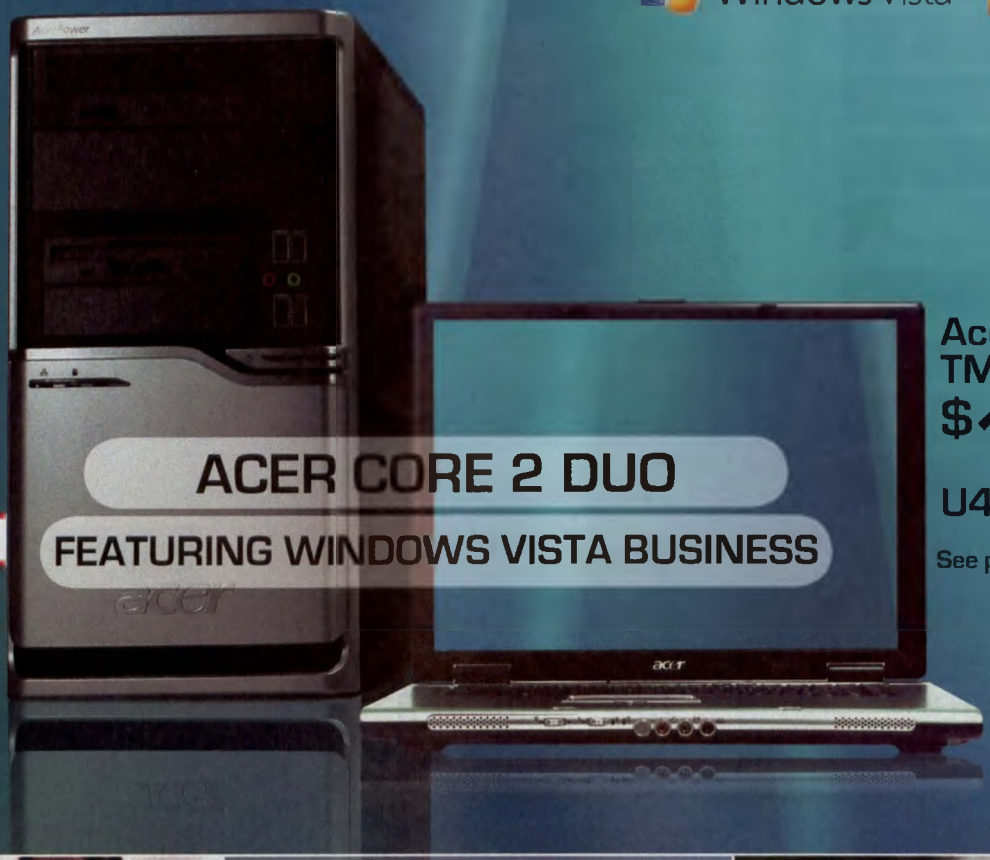
Windows Vista Microsoft Office



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Improving the new ht.com.au

A little more than six months ago, Harris Technology relaunched its website – the new **ht.com.au** – showcasing among other improvements, a new design, an overhaul of search and navigation and a much improved Shopping Cart and Checkout.

This relaunch was only step one for **ht.com.au**, and since August we've made many more improvements in direct response to feedback received from you – our customers.

Now in February 2007, we are continuing the journey and taking ht.com.au to the next stage in its evolution by implementing an advanced new search and navigation system.

The new system makes searching and browsing for products much quicker, adding accessories to your order easier – and most importantly was developed based on the feedback we received from you.

We encourage all our customers to try the improvements we've made and have your say by visiting **ht.com.au/feedback** or by completing our Online Survey at **ht.com.au/survey**.

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February 07

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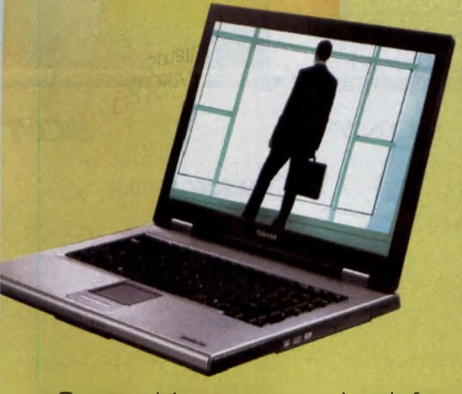

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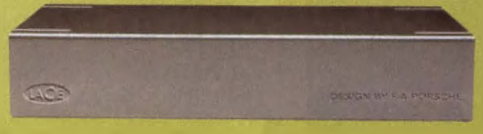

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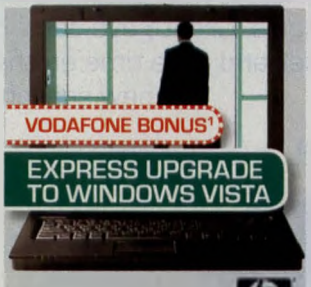

	TOSHIBA		SONY	
Model	**Sat Pro A120**	**nx6310**	**VAIO C12GPW**	**TM 3260AWXMi**
Processor	Intel Celeron M 410	Intel Celeron M 430	Intel Celeron M 430	Intel Core Solo T1350
Clock Speed	1.4GHz	1.7GHz	1.7GHz	1.8GHz
RAM	512MB DDR2	512MB DDR2	512MB DDR2	2 x 512MB DDR2
Hard Drive#	40GB*	40GB*	80GB*	80GB*
Optical Drive	DVD/CD-RW Combo	DVD/CD-RW Combo	DVD SuperMulti Dual Layer	DVD SuperMulti Dual Layer
Screen	**15.4" WXGA Widescreen**	**15" XGA**	**13.3" WXGA Clear Bright**	**14.1" WXGA Widescreen**
Wireless LAN	802.11b/g	802.11b/g	802.11a/b/g & Bluetooth v2.0	802.11a/b/g
Weight	2.9kg	2.8kg	2.3kg	2.4kg
Operating System	Windows XP Home	Windows XP Home	Windows XP Professional	Windows Vista Business
Warranty	1 year	1 year	1 year	1 year
		LIMITED STOCK	**LIMITED STOCK**	
	$989 | 40862	**$999** | U0858	**$1299** | 71552	**$1399** | U4692
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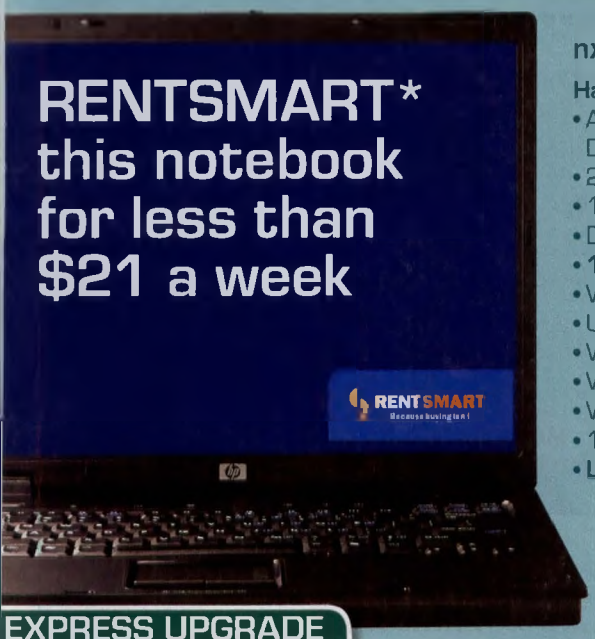

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nx6325

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- 1 year warranty
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Satellite Pro A120

TOSHIBA

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- 512MB DDR2 RAM
- 60GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
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- Wireless LAN 802.11a/b/g
- Weights 2.9kg
- Windows XP Professional
- 1 year warranty

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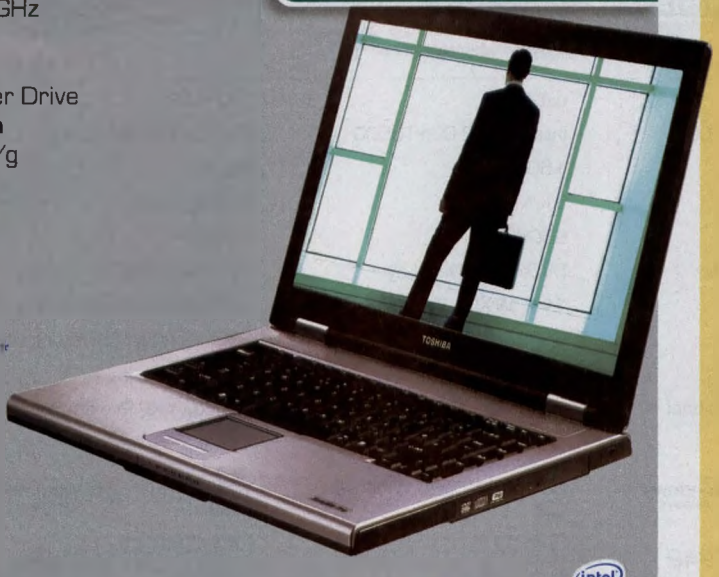

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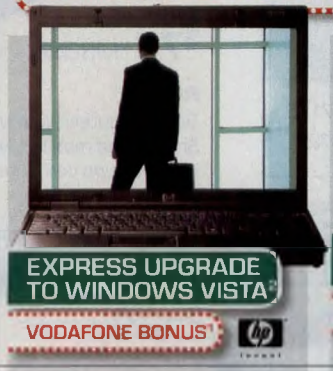

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EXPRESS UPGRADE TO WINDOWS VISTA[2]
VODAFONE BONUS[1]

Model	**nx6320**	**nx6330**	**Tecra A6**	**Tecra A7**
Processor	Intel Core 2 Duo T5500	Intel Core 2 Duo T5500	Intel Core 2 Duo T5500	Intel Core 2 Duo T5500
Clock Speed	1.6GHz	1.6GHz	1.6GHz	1.6GHz
RAM	512MB DDR2	512MB DDR2	512MB DDR2	512MB DDR2
Hard Drive#	60GB#	60GB#	60GB#	60GB#
Optical Drive	DVD±RW +Dual Layer	DVD±RW +Dual Layer	DVD SuperMulti Dual Layer	DVD SuperMulti Dual Layer
Screen	**15" XGA**	**14.1" WXGA Widescreen**	**14.1" WXGA Widescreen**	**15.4" WXGA Widescreen**
Wireless LAN	802.11a/b/g	802.11a/b/g	802.11a/b/g & Bluetooth v2.0	802.11a/b/g & Bluetooth v2
Weight	2.8kg	2.4kg	2.3kg	2.7kg
Operating System	Windows XP Professional	Windows XP Professional	Windows XP Professional	Windows XP Professional
Warranty	1 year	1 year	1 year	1 year
	$1699 | 00942	**$1799 | U0258**	**$1979 | U1593**	**$2299 | T8907**
RENTSMART	Rent* 19.05/pw	Rent*20.17/pw	Rent* 22.19/pw	Rent* 24.93/pw
Powerful Add-ons	512MB RAM | $179 | U0074 Spare AC Adaptor | $75 | T7175 Docking Station | $295 | T7178	512MB RAM | $179 | U0074 Spare AC Adaptor | $75 | T7175 Docking Station | $295 | T7178	512MB RAM | $126 | T5503 Spare AC Adaptor | $44 | T9791 Port Replicator | $275 | T5500	512MB RAM | $126 | T5503 Spare AC Adaptor | $44 | U06 Port Replicator | $275 | T550

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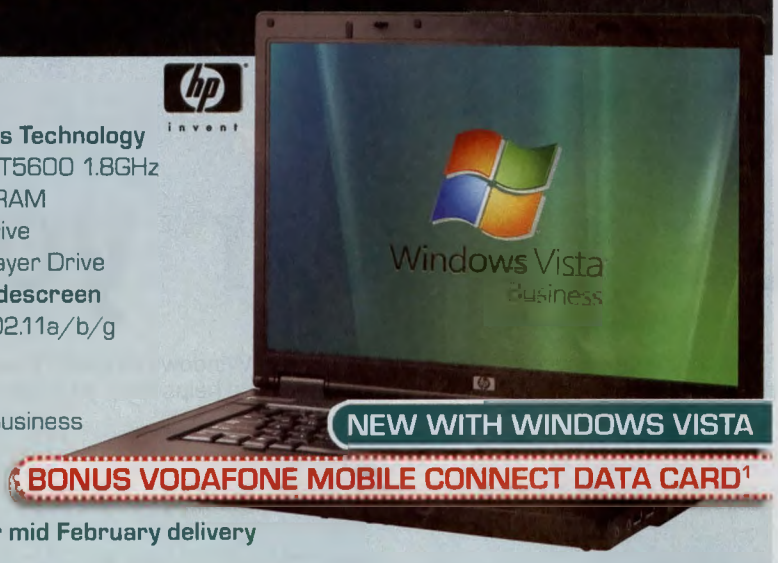
- 120GB# Hard Drive
- DVD±RW Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.5kg
- Microsoft Vista Business
- 1 year warranty



NEW WITH WINDOWS VISTA

BONUS VODAFONE MOBILE CONNECT DATA CARD[1]

Pre order now for mid February delivery

$1999

U4707 | RENT $22.41/wk*

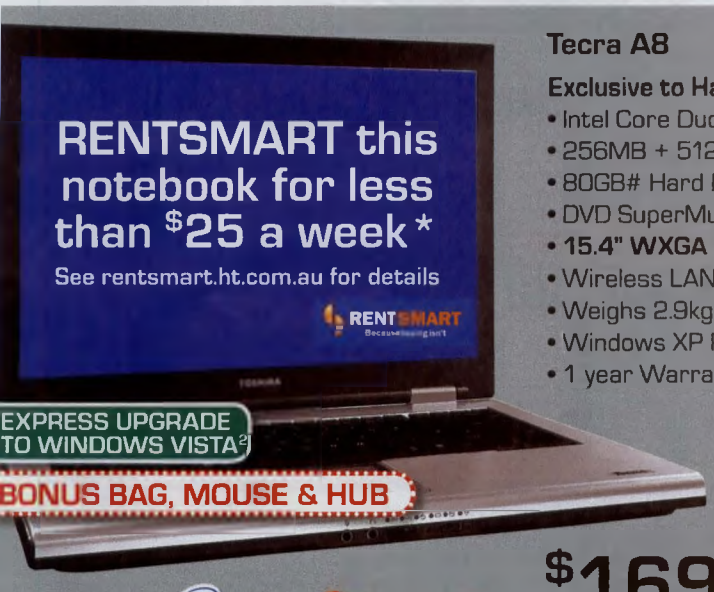
Powerful Add-ons

Docking Station | $295 | T7178
3 yr Harris Technology Extended Warranty | $239 | S0601
Spare AC Adaptor | $145 | T7174
Travel Battery | $195 | R6672

Tecra A8 TOSHIBA

Exclusive to Harris Technology

- Intel Core Duo T2300 1.6GHz
- 256MB + 512MB DDR2 RAM
- 80GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Weighs 2.9kg
- Windows XP Professional
- 1 year Warranty



EXPRESS UPGRADE TO WINDOWS VISTA[2]

BONUS BAG, MOUSE & HUB

$1699 | LIMITED STOCK

U1600 | Rent $19.05/pw*

All features above and:

- Intel Core Duo T2400 1.8GHz
- 2 x 512MB DDR2 RAM
- 80GB# Hard Drive

$1999

U1602 | Rent $22.41/pw*

All features above and:

- Intel Core Duo T2500 2GHz
- 2 x 512MB DDR2 RAM
- 100GB# Hard Drive
- Bluetooth v2.0

$2199

U1603 | Rent $24.66/pw*

Powerful Add-ons

1GB RAM | $220 | T5504
Spare AC Adaptor | $58 | T7848
Traditional Notebook Case | $75 | 56233
Targus Auto/Air Adaptor | $169 | N2037

Authorised Solutions Reseller

POSITIVELY BRILLIANT

MacBook C2-D 1.8GHz | White

- Intel Core 2 Duo 1.8GHz
- 512MB RAM
- 60GB# Hard Drive
- DVD/CD-RW Combo drive
- **13.3" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Mac OSX

$1749

U1554 | RENT $19.61/wk*

MacBook C2-D 2GHz | White

All features above and:

- Intel Core 2 Duo 2GHz
- 1GB RAM
- 80GB# Hard Drive
- DVD Super Drive

$2099

U1556 | RENT $23.54/wk*

MacBook C2-D 2GHz | Black

All features above and:

- 120GB# Hard Drive

$2399

U1557 | RENT $26.01/wk*

web links

APPLE
ht.com.au/apple
HP
hp.ht.com.au
RENTSMART
rentsmart.ht.com.au
BELKIN
belkin.ht.com.au
SONY
sony.ht.com.au
TOSHIBA
toshiba.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

***Rentsmart:** The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see **rentsmart.ht.com.au**

Available capacity of hard drive may be less due to preinstalled software

[1]Available by redemption only from 05/01/07 to 31/03/07 from hp.com.au/connect. Does not include data plan. Other terms and conditions may apply. Not available in conjunction with any other offer. Only available while stocks last.

[2] See page 13 for details.

What can Windows Vista do for you?

Security

Protect yourself Vista is engineered to be the most secure version of Windows yet. Windows Firewall helps protect you from hackers and viruses. Defender helps protect you against spyware and Security Centre helps keep your data safe.

Communications

Work Virtually Anywhere The Network Centre empowers you to easily connect to almost any network, be it wireless, 3G, broadband at your home or your business LAN, and Network Diagnostics makes you the expert.

Power Management

Be Mobile for Longer Stay mobile for longer with Sleep mode, which protects all your data, saves battery power and restores in just 2-3 seconds. ReadyBoost can empower a USB Key to accelerate your work while using minimum power.

Performance

Respond Quicker Not only does Vista take better advantage of Multicore & 64bit technologies, it also includes new tools such as faxing, scanning, Instant Search and Speech Recognition to make every day tasks even faster.

14.1" Widescreen | Best for mobile use
A fantastic compromise between screen space & weight (2.3kgs & 3 hours runtime.)

Tecra A6

TOSHIBA

- Intel Core 2 Duo T5500 1.6GHz
- 512MB DDR2 RAM
- 60GB# Hard Drive
- DVD SuperMulti Dual Layer
- **14.1" WXGA widescreen**
- ATI Mobility Radeon X1600 256MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.3kg
- Up to 3 hrs battery life
- 1 year warranty
- Windows Vista Business

intel Centrino Duo

Windows Vista Business

Pre-order now for mid February delivery

$1869

U4749 | RENT $20.96/wk*

15.4" Widescreen | Best for occassional mobile use
Enjoy more screen space when you dont need to carry your notebook often (2.77kgs & 3.5 hours runtime.)

TM 4234WLMi

acer

- Intel Core 2 Duo T5600 1.8GHz
- 1GB DDR2 RAM
- 120GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Widescreen**
- nVidia GeForce Go 7300 256MB Turbocache
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.77kg
- Up to 3.5 hrs battery life
- 1 year warranty
- Windows Vista Business

intel Centrino Duo

Windows Vista Business

$1899

U4689 | RENT $21.29/wk*

Visit rentsmart.ht.com.au for the latest rent promotion

Powerful machines...

Powerful | Select from the **most powerful notebooks** on the market. These machines are built using the latest processors, communications and storage technology.

VAIO FE35GP

SONY

- Intel Core 2 Duo T5600 1.8GHz
- 512MB DDR2 RAM
- 100GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **15.4" WXGA Clear Bright Widescreen**
- nVidia Go 7600 with 128MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Up to 3 hours battery life
- Windows XP Professional
- **LIMITED STOCK**

$2199

U0673 | RENT $24.93/wk*

VAIO FE38GP

All features above and:

- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 120GB# Hard Drive
- **LIMITED STOCK**

$2599

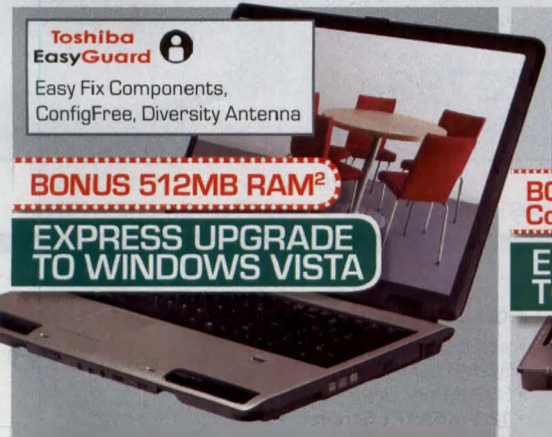
U0674 | RENT $28.18/wk*

EXPRESS UPGRADE TO WINDOWS VISTA

BONUS Speakers & 512MB Microvault

intel | Wi Fi | Windows Professional

Desktop Replacement | These models combine 17" widescreen displays, fast processors & large hard drives for those who don't need to move their notebooks often.


Toshiba EasyGuard
Easy Fix Components, ConfigFree, Diversity Antenna
BONUS 512MB RAM²
EXPRESS UPGRADE TO WINDOWS VISTA

Satellite Pro P100

TOSHIBA

- Intel Core Duo T2400 1.8GHz
- 512MB DDR2 RAM
- 100GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- **17" WSXGA+ Gloss Widescreen**
- nVidia GeForce Go 7300 with 128MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Windows XP Professional
- **LIMITED STOCK**

intel | Bluetooth | Windows Professional

$2599

A7575 | RENT $28.18/wk*

nx9420

hp invent

- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 120GB# Hard Drive
- DVD±RW+DL Drive
- 17" WSXGA+ Widescreen
- ATI Mobility Radeon X1600 with 256MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Windows XP Professional
- **LIMITED STOCK**

intel Core 2 Duo | Bluetooth | Windows Professional

$2999

01179 | RENT $31.90/wk*

Notebooks

Authorised Solutions Reseller

Apple MacBook Pro 15.4" 2.1GHz

- Intel Core 2 Duo 2.1GHz
- 1GB DDR2 RAM
- 120GB# hard drive
- DVD SuperDrive
- ATI Mobility Radeon X1600 with 128MB Graphics RAM
- **15.4" WXGA+ Widescreen**

$3199

U1232 | RENT $34.03/wk*

Apple MacBook Pro 17" 2.3GHz

- Intel Core 2 Duo 2.3GHz
- 2GB DDR2 RAM
- 120GB# hard drive
- DVD SuperDrive
- ATI Mobility Radeon X1600 with 256MB Graphics RAM
- **15.4" WXGA+ Widescreen**

$3999

U1233 | RENT $40.84/wk*

web links

ACER
acer.ht.com.au
APPLE
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RENTSMART
rentsmart.ht.com.au
SONY
sony.ht.com.au
TOSHIBA
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***Rentsmart:** The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see **rentsmart.ht.com.au.**

Available capacity of hard drive may be less due to preinstalled software.

[1]Available by redemption only from 15/01/07 to 31/03/07 from **hp.com.au/connect**. Does not include data plan. Other terms and conditions may apply. Not available in conjunction with any other offer. Only available while stocks last.

[2]RAM not installed

Ultra Portable Series...

Plantronics Voyager 510SL Bluetooth Headset System

Image for illustration purposes only

- Balanced, lightweight design for superior comfort

$299 | T2548

Plantronics .Audio 910 Voyager USB Headset

- The Ultimate VoIP optimised Bluetooth headset, with seamless sharing between a mobile phone, PC or PDA

$199 | U0121

Microsoft Wireless Notebook Presenter Mouse 8000

- Smoothly navigate through Microsoft Office PowerPoint & other presentations from up to 9 metres away from the PC

$149 | U4249

web links

HP
hp.ht.com.au
LOGITECH
logitech.ht.com.au
MICROSOFT
microsoft.ht.com.au
PLANTRONICS
plantronics.ht.com.au
RENTSMART
rentsmart.ht.com.au
SONY
sony.ht.com.au
TOSHIBA
toshiba.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.
*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see rentsmart.ht.com.au.
Available capacity of hard drive may be less due to preinstalled software
¹RAM not installed

Ultra Light | Don't let your notebook be a burden!

Designed from the ground up for **work and travel**, you will not come to regret carrying these notebooks in your car or through an airport, and with the latest wireless and battery technology, they won't slow you down.

Portege R200

TOSHIBA
Toshiba EasyGuard

- Intel Pentium M 773 1.3GHz ULV
- 512MB + 256MB DDR RAM
- 60GB# Hard Drive
- **12.1" XGA Screen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.29kg
- Up to 5.5hrs battery life
- Windows XP Professional
- 3 year warranty

Bluetooth
Windows Professional

$3199
T7682 | RENT $34.03/wk*

VAIO TX46GPW

SONY

- Intel Core Solo U1300 1GHz ULV
- 512MB DDR2 RAM
- 60GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
- **11.1" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.25kg
- Up to 9.5 hours of battery life
- Windows XP Professional
- 1 year warranty

intel Centrino
Bluetooth
Windows

$2799
20392 | RENT $29.77/wk*

Powerful Add-ons

Port Replicator for Toshiba R200 | $385 | T6205
3 year Harris Technology Extended Warranty | $289 | S0602
Port Replicator for Sony TX | $359 | 38549
SanDisk 2GB Flash Drive | $89 | T8375

Portege M400 Tablet

TOSHIBA
Toshiba EasyGuard

- Intel Core Solo T1300 1.6GHz
- 512MB DDR2 RAM
- 60GB# Hard Drive
- **12.1" XGA TFT Screen**
- Wireless LAN 802.11a/b/g
- Microsoft Windows XP Tablet Edition
- 3 year warranty
- **LIMITED STOCK**

Also Available
Portege M400 1.8GHz | **$3799** | T5499
LIMITED STOCK

intel Centrino
WiFi
Windows Tablet PC Edition

$2799
T5498 | RENT $29.77/wk*

Tablet Notebooks | Write your notes straightaway.

Annotate your data on the fly. **Draw** your ideas live, and e-mail it all to your colleagues.

Powerful Add-ons

3 WAYS TO SHOP | CALL | CLICK | VISIT

harristechnology

Mobile Performance | Powerful ultra portable notebooks are perfect for mobile professionals. Dual Core technology in a 1.9kg package will power through the most demanding applications on the move.

EXPRESS UPGRADE TO WINDOWS VISTA

Portege M500 — TOSHIBA

- Intel Core 2 Duo T5500 1.6GHz
- 1GB DDR2 RAM
- 60GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
- **12.1" WXGA CSV Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.86kg
- 3 year warranty

Bluetooth | Windows

$2899
23438
RENT $30.84/wk*

Toshiba EasyGuard
3D Hard Drive Protection
Spill resistant keyboard
Tested Platform Module

BONUS Speakers & 512MB Microvault

EXPRESS UPGRADE TO WINDOWS VISTA

VAIO SZ38GP — SONY

- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 120GB# Hard Drive
- DVD SuperMulti Dual Layer Drive
- **13.3" WXGA Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.69kg
- Up to 6.5 hours of battery life
- Windows XP Professional
- **LIMITED STOCK**

Bluetooth | Windows

$3699
69892 | RENT $38.62/wk*

Also Available:
VAIO SZ34GP | $2799 | 41558
LIMITED STOCK

Powerful Add-ons

Spare AC Adaptor for M500 | $92 | U0592
1GB RAM for M500 | $220 | T5504
Port Replicator for SZ Series | $369 | T5020
Harris Technology Extended Warranty $289 | S0602

Toshiba's brand new flagship tablet, with a 12.1" LED widescreen display, has been designed and built to the highest quality standards. Working closely with Microsoft, this light weight machine has been optimised to take advantage of the latest Windows Vista features.

Portege R400 Tablet

Toshiba EasyGuard — TOSHIBA

Use Windows Vista as it was designed to be used, with a pen!

- Intel Core Duo U2500 1.2GHz ULV
- 2 x 1GB DDR2 RAM
- 80GB* hard drive
- **12.1" WXGA LED CSV Widescreen**
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.7kg
- Windows Vista Business
- 1 year warranty

$3849
U4642 | RENT $40.19/wk*

Bluetooth | Windows Vista

NEW with Windows Vista

AC adaptor for Portege M400 | $92 | U0592
3 year Harris Technology Extended Warranty | $289 | S0602
Targus tablet PC & notebook stand | $35 | M9827
LaCie 160GB USB Hard Drive | $229 | U4680

EXPRESS UPGRADE TO WINDOWS VISTA

Windows Vista

UPGRADE TO VISTA!

Harris Technology works closely with Microsoft and our vendors to ensure you're up to date with the latest software. Redeem your copy of the Windows Vista Operating System and enjoy Vista's benefits on hardware you purchase now.

Acer
upgradeweb.moduslink.com/vista/Acer

HP
upgradeweb.moduslink.com/Vista/HP

Toshiba
www.isd.toshiba.com.au/vistaupgrade

Sony
www.sony.com.au/vaio

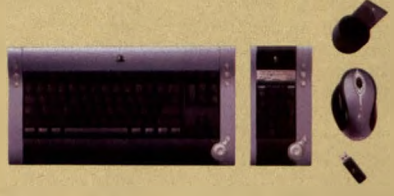
Please note upgrades are only available by redemption on select models with Windows XP purchased between 26/10/06 and 15/3/07. Proof of purchase required. Individual terms, conditions, postage, handling or additional fees may apply for each vendor's upgrade program. Please see the above links for costs and further details.

Microsoft Optical Desktop Elite — Microsoft

- High performance Wireless Bluetooth desktop
- Features ultimate Keyboard and Mouse navigation with Tilt Wheel Technology
- Perfect with Media Center Edition PCs

$299 | P7009

Logitech diNovo Media Desktop Bluetooth Laser



- Today's most advanced bluetooth desktop for the digital world with MX laser mouse, media controller and integrated calculator

$320 | T3582

Desktop deals...

AcerPower F6 Microtower Bundle

- **Processor:** Intel Pentium D 945 3.4GHz
- **Memory:** 1GB DDR2 (2 x 512MB)
- **Hard Drive:** 250GB 7200RPM SATA
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Windows XP Pro
- **Warranty:** 1 year limited onsite
- Integrated graphics
- Desktop speakers included
- USB keyboard & mouse included
- **Acer AL2016W 20" Widescreen Monitor**

EXPRESS UPGRADE TO WINDOWS VISTA

EXCLUSIVE

$1499

U4877 | RENT $16.81/wk

$99 CASHBACK[1]

WINDOWS VISTA BUSINESS EDITION

AcerPower FH

- **Processor:** Intel Core 2 Duo E4300
- **Memory:** 1GB DDR2 (2 x 512MB)
- **Hard Drive:** 80GB SATA (7200RPM)
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Microsoft Windows Vista Business
- **Warranty:** 1 year limited onsite

$1199 BEFORE CASHBACK YOU PAY $1298

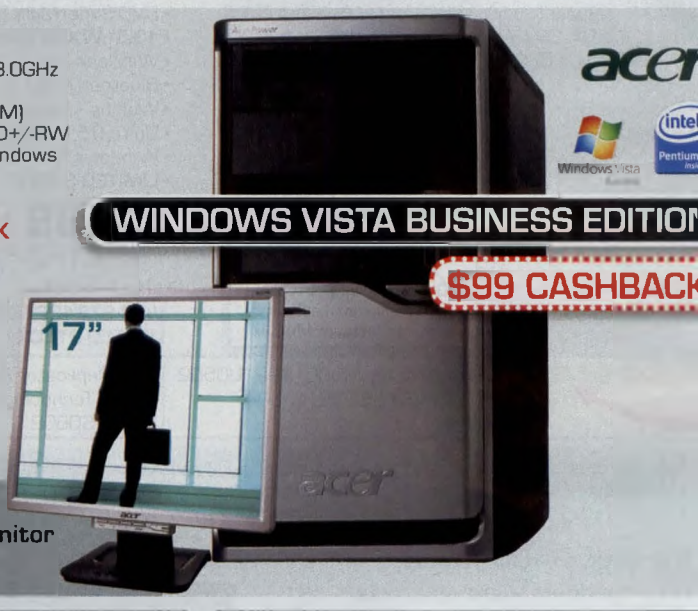
U4541 | RENT $13.87/wk*

AcerPower FH

- **Processor:** Intel Pentium 4 630 3.0GHz
- **Memory:** 1GB DDR2 (2 x 512MB)
- **Hard Drive:** 80GB SATA (7200RPM)
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Microsoft Windows Vista Business
- **Warranty:** 1 year limited onsite

$899 BEFORE CASHBACK YOU PAY $998

U4524 | RENT $10.40/wk*



WINDOWS VISTA BUSINESS EDITION

$99 CASHBACK

Also Available:
Acer AL1716S 17" LCD Monitor
$285 | T3247

web links

ACER
acer.ht.com.au
HP
hp.ht.com.au
RENTSMART
rentsmart.ht.com.au
SAMSUNG
samsung.ht.com.au

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*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

Available capacity of hard drive may be less due to preinstalled software

[1]Available via redemption from Acer from 01/02/07 to 28/02/07. Visit **acer.ht.com.au** for details.

Samsung 940BW Widescreen

- Viewable Image Size: 19"
- Interface: Analogue & Digital
- Resolution: 1440 x 900
- Contrast Ratio: 500:1
- Response Time: 4ms
- Height adjustable
- 3 year onsite exchange and zero dead pixel policy

$469 | 19" | U3759

Samsung 203B

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1400 x 1050
- Contrast Ratio: 600:1
- Response Time: 8ms
- Height adjust & pivot stand
- 3 year onsite exchange and zero dead pixel policy

$489 | 20" | T5571

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3 WAYS TO SHOP | CALL CLICK VISIT

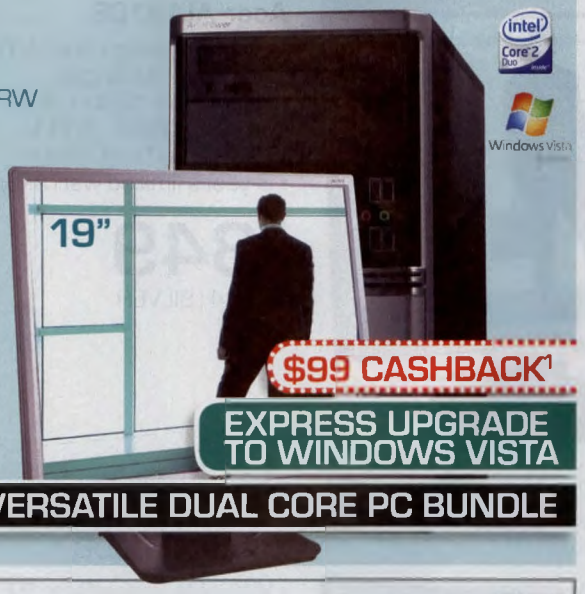
harristechnology

Desktops

AcerPower FH Microtower Bundle

acer

- **Processor:** Intel Core 2 Duo E6300
- **Memory:** 1GB DDR2 (2 x 512MB)
- **Hard Drive:** 160GB SATA (7200RPM)
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Microsoft Windows Vista Business
- **Warranty:** 1 year limited onsite
- **Monitor:** Acer 19" Widescreen LCD



$99 CASHBACK[1]

EXPRESS UPGRADE TO WINDOWS VISTA

VERSATILE DUAL CORE PC BUNDLE

$1699

U4543 | RENT $19.05/wk

BEFORE CASHBACK YOU PAY $1798

EXPRESS UPGRADE TO WINDOWS VISTA

POWERFUL ATHLON X2 PROCESSOR

hp dx2250 Microtower

- **Processor:** AMD Athlon 64 X2 3800+
- **Memory:** 1GB DDR2 (2 x 512MB)
- **Hard Drive:** 160GB SATA (7200RPM)
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Microsoft Windows XP Professional
- **Warranty:** 1 year limited onsite

$1049

U4630 | RENT $12.14/wk*

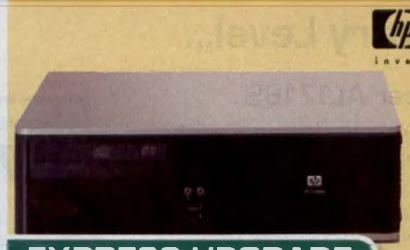
ASK US ABOUT EXTENDED WARRANTY

Samsung 205BW Widescreen

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1680 x 1050
- Contrast Ratio: 600:1
- Response Time: 6ms
- Height adjust & pivot stand
- 3 year onsite exchange and zero dead pixel policy

$585

A7499 | RENT $6.77/wk*



EXPRESS UPGRADE TO WINDOWS VISTA

HP dx5750 SFF

- **Processor:** AMD Athlon 3500+ 2.2GHz
- **Memory:** 512MB DDR2 PC5300
- **Hard Drive:** 80GB SATA (7200RPM)
- **Optical Drive:** DVD-ROM
- **Operating System:** Windows XP Professional
- **Warranty:** 3 year limited onsite

$999

U4579 | RENT $11.56/wk*

HP dx5750 SFF Dual Core

- **Processor:** AMD Athlon X2 3800+ 2.0GHz Dual Core
- **Memory:** 1GB DDR2 PC5300 (2 x 512MB)
- **Hard Drive:** 80GB SATA (7200RPM)
- **Optical Drive:** 16x Dual Layer DVD+/-RW
- **Operating System:** Windows XP Professional
- **Warranty:** 3 year limited onsite

$1200

U3813 | RENT $13.88/wk*

6 Smart Reasons to Rent

- Affordable monthly repayments
- Save your money
- Tax deductible
- Always have the latest equipment
- Get more equipment
- Fast approval

RENTSMART

Monitors...

Entry Level...

Acer AL1716S

- Viewable Image Size: 17"
- Interface: Analogue
- Resolution: 1280 x 1024
- Contrast Ratio: 500:1
- Response Time: 8ms
- 3 years limited warranty

$285

SILVER | T3247

Also available:
Targus DEFCON CL Combination Cable Lock
$59 | 81511

Acer AL1916S

- Viewable Image Size: 19"
- Interface: Analogue
- Resolution: 1280 x 1024
- Contrast Ratio: 500:1
- Response Time: 8ms
- 3 years limited warranty

$349

T4734 | SILVER

Value Level...

Samsung 740B

- Viewable Image Size: 17"
- Interface: Analogue & Digital
- Resolution: 1280 x 1024
- Contrast Ratio: 600:1
- Response Time: 8ms
- Height adjust & pivot stand
- 3 year on site exchange and zero dead pixel policy^

$339

S9253 | BLACK
S9248 | SILVER

Samsung 940B

- Viewable Image Size: 19"
- Interface: Analogue & Digital
- Resolution: 1280 x 1024
- Contrast Ratio: 700:1
- Response Time: 8ms
- Height adjust & pivot stand
- 3 year onsite exchange and zero dead pixel policy

$429

S8307 | BLACK
S8306 | SILVER

Also available:
Belkin Flip (USB KVM with Audio)
$99 | T7209

Premium Level...

NEC LCD1990SXI Professional

- Panel Technology - S-IPS TFT for improved colour reproduction
- Viewable Image Size - 19"
- Interface - Analog & Digital
- Resolution - 1280 x 1024
- Contrast Ratio - 600:1
- 3 years limited warranty

$1049

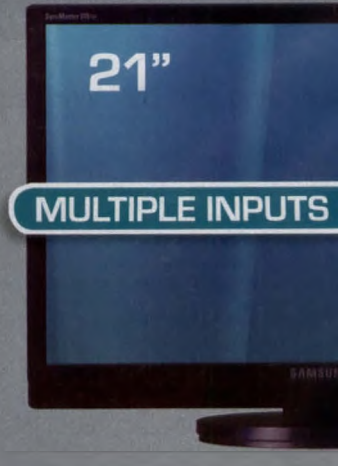
U4236 | RENT $12.14/wk*

Samsung 215TW Widescreen

- Viewable Image Size: 21" Widescreen
- Interface: Digital & Analogue S-Video, Component & Composite
- Resolution: 1680 x 1050
- Contrast Ratio: 1000:1
- Response Time: 8ms
- Integrated speaker & headphone jack
- Height adjust, pivot and swivel stand
- 3 year on site exchange and zero dead pixel policy^

$799

T6656 | RENT $9.24/wk*
BLACK



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Display

Acer AL2016W

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1680 x 1050
- Contrast Ratio: 600:1
- Response Time: 8ms
- 3 years limited warranty

$479

U4522 | SILVER

Also available:
Belkin Flip (USB KVM with Audio)
$99 | T7209

Samsung 204B

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1600 x 1200
- Contrast Ratio: 800:1
- Response Time: 5ms
- Height Adjustable, pivot & swivel-stand
- 3 year on site exchange and zero dead pixel policy^

$619

T4408
BLACK/SILVER TRIM

NEC 20WGX2 Opticlear Widescreen

- Viewable Image Size: 20" Widescreen
- Interface: Analogue & Digital
- Resolution: 1680 x 1050
- Contrast Ratio: 1600:1
- Response Time: 6ms
- OptiClear screen technology
- Integrated USB 2.0 Hub
- 3 years limited onsite warranty

$1049

T7691 | RENT $12.14/wk*
BLACK/SILVER TRIM

Also available:
Targus DEFCON CL Combination Cable Lock
$59 | 81511

Samsung 940BW

- Viewable Image Size: 19"
- Interface: Analogue & Digital
- Resolution: 1440 x 900
- Contrast Ratio: 500:1
- Response Time: 4ms
- 3 year onsite exchange and zero dead pixel policy

$469 | U3759

Samsung 205BW

- Viewable Image Size: 20"
- Interface: Analogue & Digital
- Resolution: 1680 x 1050
- Contrast Ratio: 600:1
- Response Time: 6ms
- 3 year onsite exchange and zero dead pixel policy

$585

A7499 | RENT $6.77/wk*

web links

ACER
acer.ht.com.au
NEC
nec.ht.com.au
RENTSMART
rentsmart.ht.com.au
SAMSUNG
samsung.ht.com.au

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***Rentsmart:** The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au**

Projectors...

NEC VT-49 LCD Projector

NEC

- LCD technology
- SVGA resolution
- 1600 ANSI Lumens
- 600:1 contrast ratio
- Multiple input terminals
- Lamp life 3000 hours
- Compact 2.8kg
- Integrated speaker
- 2 years limited warranty[1]

$999

U1308 | RENT $11.56/wk*

Also Available:
2C See-It 84" Pull Down Wall/ceiling Projector Screen
$279 | S8072

NEC VT-490 LCD Projector

- LCD technology
- SVGA resolution
- 2000 ANSI Lumens
- Wall colour correction
- Compact: 2.9kg
- Security function
- Quick start and power off function
- Includes soft carry case and remote
- 2 years limited warranty[1]

$1279

U1309 | RENT $14.80/wk*

Also Available:
Targus DEFCON CL: Combination Cable Lock
$59 | 81511

web links

ACER
acer.ht.com.au

NEC
nec.ht.com.au

RENTSMART
rentsmart.ht.com.au

SAMSUNG
samsung.ht.com.au

SONY
sony.ht.com.au

TOSHIBA
toshiba.ht.com.au

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Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au**

[1]Warranty conditions apply.

[1]Purchase a TDP-S35, TDP-T45 or TLP-XD2000 Projector until 31/03/07 and recieve 1 x Bonus aluminimum case or 1 x universal ceiling bracket via redemption directly from Toshiba. Visit **toshiba.ht.com.au** for redemption form and full terms and conditions.

[2]Offer available via redemption from Acer from 01/02/07 to 28/02/07. See **acer.ht.com.au**

Toshiba T45

TOSHIBA

- DLP technology
- XGA resolution
- 2500ANSI Lumens
- 2000:1 contrast ratio
- Compact 3.0kg
- Integrated speaker
- Includes soft case and remote

BONUS[1]

$1995

T8919 | RENT $22.37/wk*

TDP-S35 DLP Projector

TOSHIBA

- DLP technology
- SVGA resolution
- 2000 ANSI Lumens
- 2000:1 contrast ratio
- Compact 3.0kg
- Integrated speaker
- Includes soft carry case and remote control

$1299

T8918 | RENT $15.03/wk*

BONUS[1]

QUALITY ASSURANCE WARRANTY ON ALL TOSHIBA PROJECTORS

- 3 year parts and labour
- 90 day lamp & faulty product replacement

TOSHIBA

ULTIMATE PORTABILITY ONLY 1KG

BONUS[1]

P8 DLP Projector

- DLP technology
- XGA resolution
- 1500 ANSI Lumens
- 2100:1 contrast ratio
- Compact 1.0kg
- Perfect combination: extremely mobile and bright
- Includes soft carry case and remote
- 3 year warranty

$2559

T3878 | RENT $27.75/wk*

3 WAYS TO SHOP | CALL | CLICK | VISIT

harristechnology

TOSHIBA PROJECTOR BONUS[1]

Purchase any Toshiba projector before March 31 2007 and recieve a bonus 84" Pull down projector screen or universal ceiling bracket via redemption

TDP-T9 DLP Projector

TOSHIBA

- DLP Technology
- XGA Resolution
- 2000 ANSI Lumens
- 2000:1 Contrast ratio
- ECO Mode: reduces noise and extends lamp life
- Compact 2kg
- Includes soft carry case and remote control

$1749

T6349 | RENT $19.61/wk*

Sony VPLES3

SONY

- 3LCD Technology
- SVGA Resolution
- 2000ANSI Lumens
- Short throw lens
- 6 Picture modes
- Ceiling mountable
- Compact 2.9kg
- 2 years limited warranty

$1429

T5456 | RENT $16.02/wk*

Also Available:

Targus DEFCON CL: Combination Cable Lock
$59 | 81511

2C See-It 84" Pull Down Wall/ceiling Projector Screen
$279 | S8072

VPL-CS21 SVGA Projector

SONY

3LCD

- 3LCD Technology
- XGA & SVGA resolution
- 2100 ANSI Lumens
- Macintosh® compatible
- Accepts Digital TV signals, including HDTV up to 1080/50i
- Multiple inputs
- Password security and control panel lock
- Image flip and image freeze function
- Includes soft carry case and remote
- 2 years limited warranty†

$1779

P1841 | RENT $19.95/wk*

VPL-CX21 XGA Projector

$2399

A7588 | RENT $26.01/wk*

LCD TV

Acer AT3220B 32" LCD TV

acer

- AT3220B: 32" (80cm)
- Resolution: 1366 x 768
- Brightness: 500 nits
- Contrast ratio: 1200:1
- Display colour: 16.7million
- Response Time: 8ms
- Weight: 17.7kg
- HDMI Input
- HD TV ready

$1150 BEFORE CASHBACK YOU PAY $1299

A7460 | RENT $13.31/wk

Samsung LA27S71BX 27" LCD TV

SAMSUNG

- LA27S71BX: 27" (68cm)
- Resolution: 1366 x 768
- Brightness: 500 nits
- Display colour: 16.7 million
- Response Time: 8ms
- Weight: 10.3kg
- Wall mountable
- HDMI Input
- HD TV ready

$1199

U3875 | RENT $13.87/wk

All Your Video & Photographic Needs...

Canon IXUS 750

- 7.1 megapixel
- Canon 3x optical zoom lens
- Huge 2.5 inch LCD screen
- Super fast DiG!C II Imaging Processor
- Print/Share[1] Button allows easy 'one push' printing of images straight from the camera

$499 | S9168

Camera Accessories
Ixus 750 Case | $27 | S8197
1GB Ultra II SD Card | $69 | R3303

Canon PSA530

SAVE $20

- 5.0 megapixel
- Canon 4x optical zoom lens
- Movie recording and playback with sound
- Print/Share[1] Button allows easy 'one push' printing of images straight from the camera

$249 | U1297

Camera Accessories
PSA 530 Case | $23 | S8103
1GB Ultra II SD Card | $69 | R3303

web links

CANON
canon.ht.com.au
HP
hp.ht.com.au
NAVMAN
navman.ht.com.au
RENTSMART
rentsmart.ht.com.au
TOMTOM
tomtom.ht.com.au
UNIDEN
uniden.ht.com.au

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*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

[1]Compatible printer required for Direct Printing. Compatible Windows computer required for direct download.

Uniden UDC-5M

- 5.1M high density digital images
- Super long battery life
- Automatic image stabiliser
- High quality 3X optical zoom
- Large 2.5" TFT LCD monitor
- Records high quality video
- PictBridge™ compatible
- 15 Automated shooting modes
- USB 2.0 supported
- Built-In flash with red eye reduction
- 26MB internal memory
- Stylish compact design
- Designed and engineered in Japan

$179 | U1068

SAVE $20

BONUS 512MB CARD

Camera Accessories | Battery and recharger pack | $36.98 | U0928

Canon DC100-DVD Digital Camcorder

With its comfortable curved design, the ultra compact DC100 records photos and high quality video straight to DVD (-R/-RW). It features a massive 25x optical zoom lens, Real Widescreen recording and a 2.7" widescreen LCD.

SAVE $50

- Super small and lightweight for ultimate portability
- Direct-to-DVD shooting for convenient playback on home DVD players
- Powerful Canon 25x video zoom lens
- 800K CCD and DiG!C DV for high quality videos
- Wide 2.7" LCD Screen
- Photo capture to DVD
- Real 16:9 Widescreen recording for breathtaking playback on widescreen TVs

$649
U1289 | RENT $7.51/wk

Camera Accessories
Sony 8cm DVD-R | $6 | T0840
Sony 8cm DVD-RW | $10 | S7850

Canon MV920 MiniDV Camcorder

Designed for ease of use, the compact MV920 is a Real Widescreen camcorder with powerful 25x optical zoom. With DiG!C DV signal processing for vibrant colours and an 800K pixel CCD it delivers high quality video, perfect for viewing on a widescreen TV.

HOT OFFER

- Powerful Canon 25x zoom lens
- High resolution 800k pixel CCD and DiG!C DV for outstanding image quality
- Stylish and compact, designed for simple operation
- 2.7" Widescreen LCD and Real Widescreen recording for breathtaking playback
- Microphone input connection

$399 | U1296

Camera Accessories
Sony 60Min Premium Grade Mini DV Tape - 5 Pack
$29.95 | N1097

Visit rentsmart.ht.com.au for the latest rent promotion

3 WAYS TO SHOP | CALL CLICK VISIT

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All Your Navigation Needs...

Uniden GNS8350 GPS Navigation

Uniden

- High definition 3.5" LCD display
- Simple & easy to use with fast programming and a touch control screen
- Easy to navigate maps with dynamic voice and visual guidance
- Fixed speed, red light and black spot warning
- Unique night mode for easy glare free view
- Different visual guidance views
- Half million points of interest
- Multi Media Player allowing you to play your favourite videos and music, or even view your digital photos when saved on an SD memory card

PRICE DROP

$599

U0576 | RENT $6.93/wk*

BONUS

Uniden UHF Communicators twin pack with every GPS

HP iPAQ rx5765 Travel Companion

hp invent

- Integrated SiRFstarIII GPS receiver
- Integrated omni-directional GPS antenna
- Navigation software and maps pre-installed
- Samsung 400MHz processor
- Secure Digital (SD/SDIO) expansion slot
- 3.5" QVGA touch screen panel with antiglare

$799

U1293 | RENT $9.24/wk*

TomTom GO710 GPS Navigator

tomtom

- 4.0" anti-glare widescreen LCD with crystal-clear 3D graphics
- Hands-free calling for your mobile phone using Bluetooth® technology. So you can make and receive calls as you drive with just a touch of the screen
- iPod® control: Connect your iPod® and operate it via the touchscreen and enjoy MP3's through the high quality speaker or via your car stereo
- The latest maps with pre-installed Safety Cameras database
- Door-to-door and Itinerary planning with Choice of Routes

$899

T9874 | RENT $10.40/wk*

NAVMAN

Navman F20 Portable GPS Navigator

Simple, color-coded easy to use interface

- 3.5" touch screen
- Nearest fuel and parking buttons
- Slim, lightweight design
- Speed and red light camera warnings (via optional connectivity pack)
- Auto switching day and night display
- 2006 (V13) Australia-wide mapping
- 'Navigate to home' button
- Avoid tolls/ferries/unsealed roads
- Shortest distance or fastest time routing options
- Storage for up to 50 favorites
- Nearest place of interest

$499 SAVE $130

U0755 | RENT $7.28/wk*

Navman N40 Portable GPS Navigator

PRICE DROP

Simplified, icon based interface

- 3.5" touch screen
- Integrated NavPix camera with navigation to photos
- Nearest fuel and parking buttons
- Slim, lightweight design
- Speed and red light camera warnings via free download from website
- 2006 (V13) Australia-wide mapping
- 'Navigate to home' button
- Shortest distance or fastest time routing options

$699

U0756 | RENT $8.09/wk*

PDAs & Cordless Phones

Cordless Phones...

Uniden UHF Handheld 40ch Ultra Compact Communicators 4pk

KEEP IN TOUCH

- An ultra compact portable unit with exceptional range up to 3+ km, 40 licence free channels, range extender capability, and auto battery save

$99 | U1265

Also Available:
AAA Batteries 4pk
$9.98 | U0908

Uniden DSS 3455+1 Cordless Phone system

SAVE $20

- 2.4GHz Digital Spread Spectrum
- Designed and engineered in Japan
- Integrated digital answering machine, remote access
- Multi (4) handset capable
- Dual keypad

$179 | U0406

web links

HP
hp.ht.com.au
I-MATE
imate.ht.com.au
O2
o2.ht.com.au
PALM
palm.ht.com.au
RENTSMART
rentsmart.ht.com.au
UNIDEN
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[1]Offer available via redemption from Uniden from 20/01/07 to 28/03/07. Visit uniden.ht.com.au for more details.

Uniden DSS7960+1 Dual Line Phone

- Distinctive caller ID indicators
- Digital duplex speakerphone on handset
- 2 Line dual keypad cordless phone
- 5.8GHz digital spread spectrum technology phone system
- Multi (10) handset capable (2 Handsets Included)
- 7 way handset conferencing
- Wireless network friendly
- Advanced LCD and caller ID display

NEW

$269 | U4664

BONUS HEADSET

Uniden HS910 Headset | $29.95 | U0574

Uniden WDECT 2345+1 Cordless Phone System

BONUS HEADSET

- 2-in-1 digital phone system with multi handset capabilities
- 2.4GHz WDECT wideband digital technology
- Advanced LCD and caller ID display
- 200 caller ID memories with phone book on handset and base
- Easy menu navigation
- Integrated digital answering machine - with remote access and message indicator light
- Digital duplex speakerphone on handset/base
- Two-way communication between handsets anywhere without the base

$179 | U0403

Uniden WDECT 2355+2 Cordless Phone System

SAVE $30

- 2.4GHz wideband Dect Digital technology
- Designed and engineered in Japan
- Integrated digital answer machine with remote access
- Multi handset capabilities (up to 4)
- 100 caller ID memories with phone book
- Digital duplex speakerphone on handset and base
- POP ID - caller "name" identification

$199 | U0405

Uniden DSS7855+1 Cordless phone system with answering machine

SAVE $30

- 5.8GHz digital spread spectrum
- Designed and engineered in Japan
- Integrated digital answering machine, remote access
- Multi (4) handset capable
- Dual keypad
- Digital duplex speakerphones on handset and base
- Advanced alpha display caller ID features
- POP ID - caller "name" identification
- 100 caller ID memories with phonebook on each handset

$219 | U0570

Also available:
Uniden Additional handset | $119 | U1066

Uniden ELITE8855 Cordless Phone

- 5.8GHz digital spread spectrum with in-built Bluetooth
- Designed and engineered in Japan
- Integrated digital answering machine with remote acces
- Multi handset capable (up to 10)
- Distinctive caller ID indicators
- Digital duplex speakerphone on handset
- Downloadable/preset picture displays
- Transfer/intercom from handset to handset

$249 | U0570

Also available:
Plantronics Voyager 510 Headset | $99 | R9556
Uniden Additional Handset | $149 | U4564

Over 15,000 products available online, click ht.com.au

PDAs & Smart Phones...

XDA Atom Exec

O2 | Wi Fi | Bluetooth

- Intel PXA272 520Mhz
- 192MB ROM/64MB SDRAM
- 2.7" TFT LCD 240 x 320 resolution
- 2 megapixels
- mini-SD
- Tri-Band GSM/GPRS/EDGE
- Microsoft® Windows Mobile 5.0
- Outlook Mobile with Direct Push Technology , Office Mobile (Word, Excel, Powerpoint), Internet Explorer Mobile

SAVE $300

$899

T8955 | Rent $ 10.40/wk*

Also available
Plantronics Voyager 510 Headset | $99 | R9556

o2 Xda Stealth SmartPhone

O2 | Wi Fi | Bluetooth

- Intel XScale PXA272 416MHz
- 192MB ROM/64MB RAM
- 2.4" TFT LCD 240 x 320 Resolution VGA
- mini-SD
- Tri-Band GSM/GPRS
- Microsoft® Windows Mobile 5.0
- Phone, Contacts, Calendar, VersaMailTM Microsoft Outlook Synchronisation Software (Windows only) Web Browser, HotSync® Manager

$949

U0745 | RENT $10.98/wk*

Also available:
Plantronics Voyager 510 Headset | $99 | R9556

hp iPAQ hw6965 Mobile Messenger with Tom Tom Navigation Software

hp invent | Wi Fi | Bluetooth

- Intel® PXA270 Processor 416MHz
- 64 MB SDRAM, up to 45MB user available persistent storage memory
- 3.0" TFT 240 x 240 resolution
- Integrated QWERTY alpha-numeric keyboard
- Built-in SXGA, HP Photosmart 1.3 megapixel camera, 1280 x 1024 resolution

$1299

U3750 | RENT $15.03/pw*

GPS NAVIGATION, MOBILE PHONE & PDA ALL-IN-ONE

NEW

Palm Treo 680

palm

Bring wireless mobile productivity to your small business with the all-in-one Palm® Treo™ 680 smartphone. It delivers full phone functionality plus wireless email[1], web browsing[1], messaging[2], document editing, and more. Give your company a productivity boost and realise a quick return on investment with the Treo 680 — the ideal device for your growing business.

[1]Email and web require data services from a mobile service provider. ISP and/or VPN may also be required.
[2]Within wireless coverage area only. Additional charges may apply

$799

U4259 | RENT $9.24/wk

Bluetooth

Also available:
Palm Ultralight Wireless Headset | $149 | T7872

PDAs

HP iPAQ rx4240

hp invent

- Integrated WLAN (802.11b/g)
- Integrated Bluetooth v2.0 + EDR wireless technology
- Samsung 400MHz Processor
- Integrated Secure Digital (SD/SDIO) expansion slot
- Integrated mini-USB charging / communications port
- Removable Lithium-ion 1200mAH battery

$399 | U1022

Also available:
Plantronics Voyager 510 Headset
$99 | R9556

Wi Fi | Bluetooth

hp iPAQ hx2490 Pocket PC

- Intel® PXA270 520MHz Processor
- 256MB (192MB ROM and 64MB SDRAM) total memory, up to 128MB user available memory
- Display Transflective TFT QVGA, resolution 240 x 320 pixels
- MultiMediaCard, SD, and SDIO expansion card compatible
- Built-in Wi-Fi and Bluetooth 1.2 compliant
- OS Windows Mobile 5.0 Software, Premium Edition

$579

T3239 | RENT $6.70/wk*

Also available:
Plantronics Voyager 510 Headset
$99 | R9556

Wi Fi | Bluetooth

VoIP & Networking Solutions...

Netcomm V25 VoIP/Skype headset

- Stylish and comfortable headset with built-in microphone
- Connects to the speaker and microphone ports on your sound card

SAVE 20%

$20 | T4123

Freshtel 2070 USB Phone

- Free Firefly to Firefly calls worldwide
- Free personal Voicemail
- Includes headset

$49 | U0521

Netcomm Portable V35 VoIP/Skype Speaker Phone

The Netcomm V35 is a simple to install, easy to use, portable USB hands-free speakerphone for all VoIP or instant messaging clients

$49 | T4124

web links

ENGIN
engin.ht.com.au
FRESHTEL
freshtel.ht.com.au
NETCOMM
netcomm.ht.com.au
NETGEAR
netgear.ht.com.au
RENTSMART
rentsmart.ht.com.au
UNIDEN
uniden.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

*Rentsmart. The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au

Windows Live Messenger Capable Cordless Phone

Uniden

Free calling using Windows Live Messenger

- Surf the Internet and make VoIP Calls with one Broadband Service
- Simple to setup and connect
- Low bandwidth consumption
- Use a standard (POTS) telephone
- Standard Telephone audio quality calls

NEW

$199 | U4666

Also Available:
Uniden HS910 Headset | $29.95 | U0574

My Net Fone NetComm V100LS

NetComm

- Surf the Internet and make VoIP Calls with one Broadband Service
- Simple to setup and connect
- Low bandwidth consumption
- Use a standard (POTS) telephone
- Standard Telephone

$79 | U1220

SAVE $20

$80 CALL CREDIT

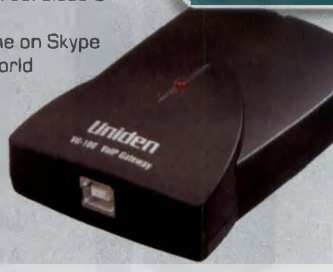
VG100 Skype VoIP Gateway

skype Ready

Uniden

- Plug in your existing phone & use Skype straight away
- Compatible with all cordless & corded phones
- Free calls to anyone on Skype anywhere in the world

NEW



$99 | U4665

SPH101 Skype WiFi Phone 802.11g

NETGEAR

- Call anyone else on Skype, anywhere in the world for free, no PC required
- Make and receive Skype phone calls wherever you have an open WiFi, Internet access
- Call any phone worldwide for cents per minute and with no monthly fees
- Skype WiFi Phone manages your

$399 | T7229

SAVE $30

4030 Stick Phone

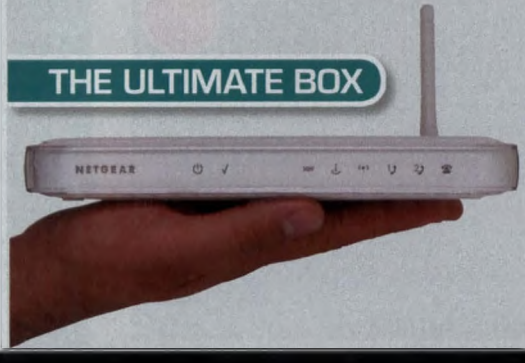
Freshtel internetphone

Connects to any computer via USB and allows you to make phone calls using any available Internet connection

- Free Firefly to Firefly calls worldwide
- Free personal Voicemail
- Includes headset
- 128MB memory
- Can be used at internet cafe

$69 | U0257

THE ULTIMATE BOX



engin Voice Box Series 3

engin
The Broadband Phone Company

- All in one unit allowing you to connect multiple devices such as PCs and notebooks wirelessly to broadband
- ADSL2 plus modem
- Allows you to run two phone lines
- Ideal for the modern home or office

$299 | T7230

NetComm HS960

- Set up a wireless hotspot anywhere
- One-box solution
- Provides Internet connections for up to 100 wireless users
- Fast and efficient processing of sales
- Charge for usage at rates you choose for yourself
- Minimal administration

NetComm®

$2035

U4381 | RENT $22.82/WK*

The one-box solution is easy to set up and manage. It includes an 802.11g+ (54Mbps) wireless router, 4 port 10/100 switch, three button printer and a service gateway. You can provide internet access by time, offering a zero configuration experience for the end customer. By simply pressing one button on the printer for the required amount of access time, a receipt is generated which provides a unique username and password for the amount of time purchased.

Several network security protocols are provided in the NetComm HS960 to fully secure your wireless communications, WPA (Wi-Fi Protected Access), WEP, SSL configuration page, SSL client login page, VLAN security on LAN ports and Layer 2 Isolation security. Without a username and password customers can not access broadband, and with layer 2 security your users will not be able to see each other.

Belkin Superior Series 6-Way (2m Cord) + TEL + $150,000 Warranty

BELKIN®

- Provides longer-lasting surge protection with higher joule ratings
- Provides greater spike and lightning absorption with higher maximum spike current ratings
- Features additional protection levels for telephone, ADSL, and cable-broadband lines

$59 | N3364

Belkin 54g All In One Print Server

BELKIN®

- Connect and share your all-in-one printer with your network - wirelessly
- Supports multifunction-printer features such as printing, scanning, faxing
- Eliminates need for a dedicated PC for printing
- Works with USB 2.0 and USB 1.1 printers

$169 | U4751

Belkin Wireless Flip

BELKIN®

- Shares one monitor, keyboard, and mouse between computers
- Shares one set of speakers between computers
- Connects instantly to notebook computers
- Features a 2 colour LED that indicates which computer flip is accessing
- Includes 2 built-in cables to connect computers

$129 | U3505

Also available:
Belkin Flip (USB KVM with Audio) | $99 | T7209

DPR-1260 Wireless 4 Port Print Server for MFP

D-Link

- 4 USB 2.0 printer connections
- Supports scanning function of multifunction printers
- Share up to 4 USB printers, multifunction printers
- Integrated 802.11g wireless interface
- Ideal for office, school or business use
- Easy control & printing of scanned documents
- Ethernet connection to wired network

$223 | T9475

KVM

SERVERLINK

2 Port Star Cable KVM PS/2

- Audio and Mic switching for multimedia applications
- Simultaneous or independent PC & audio switching
- Select via hotkey control or push buttons

$59 | Q5539

Also available:
2 Port Star Cable KVM USB | $69 | Q5540

2 Port ServerLink Dual KVM Switch - USB/PS2/Audio

- Desktop USB + PS/2 KVM switch with audio and microphone switching
- Supports USB or PS/2 computers on every port
- Supports USB or PS/2 on console side
- Multi-platform support for PC, Macintosh G3/G4 and iMAC
- Built-in 2 port USB hub for sharing USB devices

$179 | T7536

Also available:
SL-461 4 Port USB/PS2 KVM | $249 | T7537

ServerLink Altitude SL-871 8 Port USB/PS2 KVM

- Supports both USB interface and PS/2 interface on both console side and PC side
- Console port to connect your shared keyboard, video and mouse
- Fully-featured OSD menu function

$499 | T7532

Also available:
ServerLink Altitude SL-1671 16 Port USB/PS2 KVM | $749 | T7533

Networking & Servers

Connect your business...

NETGEAR

HDXB101 200Mbs Wall Plugged Ethernet Adapter 2 Pack

Turn any electrical outlet into a HD-streaming Ethernet connection

- Up to 200Mbps data rates for faster file transfers
- Built-in Quality of Service (QoS) for video streaming, gaming and VoIP
- QoS Configurable for advanced-users
- Predictable and dependable network speeds
- Simple plug and play installation
- Uses existing electrical wiring
- NB - An HDX101 may coexist with HomePlug 1.0 products but it is not compatible or interoperable with 85Mbps

$399 | U4597

web links

DLINK
dlink.ht.com.au

LINKSYS
linksys.ht.com.au

NETGEAR
netgear.ht.com.au

NETCOMM
netcomm.ht.com.au

RENTSMART
rentsmart.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

Netcomm NP280W Turbo Wireless Home Plug

NetComm

The Wireless Homeplug with 802.11G transforms your in-house power circuit into networking infrastructure and a Wireless LAN connection.

- Overcome problems with thick walls and blind spots
- Transforms standard power sockets to a wireless access point/ client/ wds
- Portable ethernet wireless access point
- No new cables, no drilling, plug and play
- Turbo data rates of up to 85Mbps
- Extend your wireless range

NEW

$229 | U4380

NP285 Twin Pack Turbo HomePlug Ethernet Over Power

NetComm

- Instantly turns a standard electrical power point into a broadband outlet
- Data is transmitted over the power lines at up to 85Mbps, eliminating the need for dedicated network cables
- Use it to share your broadband Internet service to any room with a power point

$219 | T3595

NP3680 Multi-Function Print Server

NetComm

- Easily share 2 x USB 2.0 Hi-Speed devices of your network
- Designed for an extensive range of standard and multifunction printers even allowing for ink level reporting
- Connect and share USB hard disks, flash drives and card readers

NEW

$199 | T9846

Netgear XE104 85Mbps Wall Plugged Ethernet 4 Port Switch

NETGEAR

- Turns any electrical outlet into a 4 port home network connection
- PCs in different rooms can share a broadband internet connection and share files
- Transfers data at a fast 85Mbps speed with encrypted security

$169 | T9466

Linksys WVC54GC Compact Wireless G Internet Video Camera

LINKSYS

- Sends high-quality live video to your network wirelessly - viewable from Windows PCs anywhere
- Built-in stand-alone web server, no PC necessary
- Security Mode automatically sends email alerts with video clips upon motion detection

$219 | T6437

DWL-3200AP 108Mbps Wireless LAN Access Point

D-Link

- 802.11g 108Mbps wireless connectivity
- Supports WPA-personal, WPAenterprise, 802.1x, AES
- Also works as wireless distribution system with AP
- Wireless frequency range: 2.4GHz to 2.4835GHz

$397 | T5891

DWL-8200AP Wireless Managed Dualband Access Point

D-Link

- Provides secure and manageable dualband wireless connectivity for enterprise networks
- Operable as access point or wireless bridge
- Advanced security schemes
- Power over ethernet support

$579
T6800 | RENT $6.70/wk*

Over 15,000 products available online, click ht.com.au

Good

DG834 ADSL2/2+ Modem Router + 4 Port Switch

NETGEAR

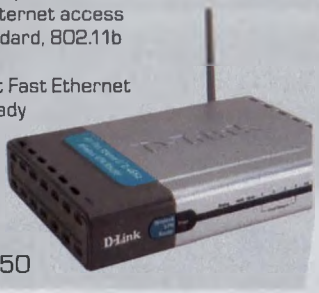
- Integrated ADSL modem, router, switch and firewall
- Future proof with support for ADSL2+
- Network security from a True Firewall with protection from Denial of Service attacks

$97 | L2610

DI-524 AirPlus Wireless G Router + 4 Port Switch

D-Link

- 54Mbps high-speed wireless broadband Internet access
- 802.11g Standard, 802.11b compatible
- Built-in 4 port Fast Ethernet switch for ready server connection



$99 | S0650

WRT54G Wireless G Broadband Router + 4 Ports

LINKSYS
A Division of Cisco Systems, Inc.

- All-in-one internet-sharing router, 4 port switch, and Wireless G (draft 802.11g) access point
- Wireless data rates up to 54Mbps - 5 times faster than Wireless B (802.11b)

$124 | H9739

NB5 - ADSL2+ Single Ethernet/USB Modem/Router

NetComm

- Powerful modem router for sharing broadband internet and building a network for wired users
- Ideal for homes and offices with multiple computers

$78 | P7335

Better

DG834G ADSL 2/2+ Wireless G ADSL Modem/Router

- Combines modem, router, switch,802.11g access point, and SPI True Firewall
- Up to 5X faster than 802.11b
- Smart Wizard detects/connects to your ISP
- Works with both 802.11g & 802.11b

$159 | L2609

DI-524UP 54Mbps Wireless Router with Print Server

- Built-in 802.11g wireless LAN with up to 54Mbps wireless speed
- Built-in USB print server
- Built-in 4 port Fast Ethernet switch
- Quality of Services for connected computers

$129 | T0646

WRT54GR Wireless G Broadband Router with RangeBooster

- All-in-one Internet-sharing router, 4 port switch and up to 2X range-enhanced Wireless G access point
- Shares a single internet connection and other resources with Ethernet wired, Wireless G, B, and RangeBooster devices

$179 | T9828

NB5PLUS4 ADSL/ADSL2+ Modem Router with 4 ports

- Powerful modem router for sharing broadband internet and building a network for wired users
- Includes 4 port Ethernet switch and USB port
- Ideal for homes and offices with multiple computers

$111 | S1159

Best

DG834N RangeMax NEXT ADSL Modem/Router

- Complies with draft 802.11n,backwards compatible with 802.11b/g
- Interoperates at 270Mbps with other products powered with Intensi-fi

$367 | T7509

DIR-635 RangeBooster N 650 Wireless Router

- QoS Engine and Draft 802.11n technology for total network performance
- Active Firewall and WPA2™ to protect your network against outside intruders
- Provides greater wireless signal rates even at farther distances for best-in-class whole home coverage

$246 | T9473

WRT300N Wireless N Broadband Router + 4 Ports Switch

- Internet-sharing router and 4 port switch, with a built in speed and range enhanced wireless access point
- MIMO technology uses multiple radios to create a robust signal that travels up to 4 times farther and reduces dead spots

$247 | T7735

NB5PLUS4W ADSL/ADSL2+ Wireless Modem Router with 4 ports

- Very popular wireless modem router for sharing broadband Internet and building a network for wired and wireless users
- Includes 54Mbps wireless, 4 port Ethernet switch and USB port

$169 | S1160

Networking & Servers

Secure, share and store your business.....

NETGEAR

SSL312 Prosafe VPN Concentrator 25

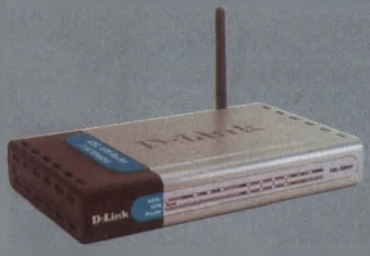
- Provides browser based secure access to your corporate network
- Remote Access – supports 25 concurrent tunnels and is tailored for the small and mid-sized businesses
- Easy to administer – customisable, intuitive administrative interface

$699

T8494 | RENT* $7.83/wk

D-Link

DSL-G804V Wireless ADSL2/2+ VPN Router with 4 Port Switch



- Wireless ADSL router with 4 port switch
- Up to 16 IPec VPN tunnels and up to 4 PPTP VPN tunnels
- Firewall protection with DoS prevention/SPI

$288 | T9474

web links

BUFFALO
buffalo.ht.com.au

DLINK
dlink.ht.com.au

LINKSYS
linksys.ht.com.au

NETGEAR
netgear.ht.com.au

RENTSMART
rentsmart.ht.com.au

SERVERLINK
serverlink.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1]NBD Hardware Replacement Warranty valid on any purchased switch listed between 01/02/07 and 28/02/07

***Rentsmart:** The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au.**

D-Link DSD-150 SECURESPOT™ Internet Security Device

D-Link Building Networks for People

Simplify the way you protect your home or small business network from viruses, network attacks, and hackers with the all-in-one SECURESPOT Internet Security Device

- Protects your home network from viruses, worms, and other online security threats
- Prevents your child from downloading and installing unwanted applications
- Provides an easy-to-use web-based control panel for setup

$229 | U4404

NEW

BONUS HARDWARE REPLACEMENT SUPPORT PACK with all the following Netgear products[1]

NETGEAR's XPressHW provides basic hardware support and next-business day hardware replacement for customers who are seeking to protect their hardware investment. NETGEAR

GS116 - 10/100/1000 16 Port Gigabit Switch

- High-speed, auto-switching 10/100/1000Mbps Ethernet connection
- Silently delivers up to 2000Mbps on each port
- Space-saving desktop dimensions
- Integrates 10, 100, & 1000Mbps devices within a network

Bonus Warranty[1]

$449 | P0140

JGS516 16 port 10/100/1000Mbps Gigabit Ethernet Switch

- Powerful, non-blocking backplane
- Affordable enough for desktop connections
- Rack mount kit included
- Flexible Auto UplinK™ Technology makes the right link

Bonus Warranty

$455 | N4662

GS716T 16 port 10/100/1000Mbps Gigabit Ethernet Switch

- Easy, browser-based switch management
- 2 Small Form-factor Pluggable (SFP) GBIC slots
- Rack mountable
- Non-blocking bandwidth

Bonus Warranty[1]

$528 | S7139

JGS524 24 port 10/100/1000Mbps Gigabit Ethernet Switch

- 24 10/100/1000 ports
- Rack mount kit included
- Powerful, non-blocking backplane
- Affordable enough for desktop connections

Bonus Warranty

$659

P7588 | RENT $7.62/wk*

GS724T 24 port Gigabit Smart Switch

- Easy, browser-based switch management
- 2 Small Form-factor Pluggable (SFP) GBIC slots

Bonus Warranty[1]

$799

N3147 | RENT $9.24/wk*

GS748TS 48 Port Gigabit Stackable Smart Switch

- 48 10/100/1000Mbps gigabit ports
- Non-blocking bandwidth
- Easy, browser-based switch management
- Rack mountable
- 4 Small Form-factor Pluggable (SFP) GBIC slots

Bonus Warranty

$1799

U4731 | RENT $20.17/wk*

Over 15,000 products available online, click ht.com.au

BUFFALO Distributed by Uniden

Buffalo LinkStation Pro 500GB Network Storage Centre

$699

U0707 | RENT $8.09/wk*

- Simplified file sharing for home or small office network
- Works as a client in an Active Directory domain allowing LinkStation Pro to utilise the domain users and groups
- High speed processor, DDR-II Ram, and SATA hard drive provide ultra fast transfer rates
- Control access with group and user level security
- Access data from any Windows or Macintosh computer on your network
- Two or more Linkstations can be used to back up each other over your network
- Easy setup does not require drivers

Buffalo LinkStation Pro 320GB Network Storage Centre

BUFFALO

- Simplified file sharing for home or small office network
- Works as a client in an Active Directory domain allowing LinkStation Pro to utilise the domain users and groups

$499 | U0706

Linksys NSLU2 Network Storage Link USB2

LINKSYS

- Connects USB 1.1 or 2.0 disk drives and flash disks directly to your network
- Share music, video, or data files with managed access by user name or group
- Integrated file server - access your files from the internet

$157 | P8510

Buffalo Home Server TeraStation 1TB Network Storage Centre

- 10/100/1000 Gigabit Ethernet port and jumbo frame capability for higher transfer speeds
- Built-in print server for sharing and managing a USB printer on the network. (May not function with certain USB printers)

$1299

U0663 | RENT $15.03/wk*

Netgear SC101 Storage Central

NETGEAR

- Share files easily with everyone on the network, while keeping your personal files private
- Setup and configuration are a breeze
- Easy upgradeability through IDE drives
- Connect via RJ - 45 Ethernet

$175 | 34265

Buffalo Home Server TeraStation 1TB Network Storage Centre

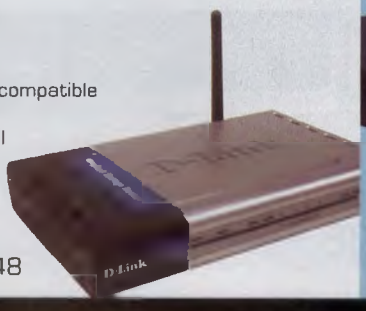
- 10/100/1000 Gigabit Ethernet port
- UPS compatibility to allow automatic or manual shutdowns safely when power is interrupted (serial port)

$1599

U0705 | RENT $17.93/wk*

D-Link DI-624S AirPlus XtremeG 108Mbps Wireless Storage Router

D-Link



- Up to 108Mbps
- 2 USB 2.0 ports
- 4 10/100 ports
- 802.11g, 802.11b compatible
- Advanced firewall & parental control

$179 | T0648

D-LINK SWITCHES

DGS-1216T 16 Port Gigabit Smart Switch

- 32Gbps switching capacity
- 10/100/1000Mbps migration
- Fiber media support via SFPs
- 4000 MAC address table

$549 | N1045

D-Link

DGS-1224T 24 Port Gigabit Desktop Switch with 2 Port Mini GBIC Slots

- 48Gbps switching capacity
- 8000 MAC Address Table
- 10/100/1000Mbps Migration

$795

N1047 | RENT $9.20/wk*

D-Link

DGS-1248T Web Smart 48 Port 10/100/1000 + 4 combo SFP Switch

- 96Gbps switching capacity
- VLAN link aggregation priority queues
- Fibre media support via SFPs
- 10/100/1000Mbps migration

$1995

S0258 | RENT $22.37/wk*

D-Link

DGS-3426 24 Port Gigabit L2+ Stackable Switch 4 Combo

- 24 gigabit ports per switch
- 4 combo SFP fibre gigabit
- 2 open slots for optional 10 gigabit uplinks
- Virtual stack or physical high-speed stacking

$3999

U4529 | RENT $40.84/wk*

D-Link

USB, Memory Cards and Portable Drives...

SanDisk SD Card and Reader

$89 | 2GB | U0098
$49 | 1GB | U0097

SanDisk 2GB Mini SD

SAVE $10

$99 | T6172

SanDisk Memory Stick and Reader

$129 | 2GB | U0096
$79 | 1GB | U0093

web links

COMSOL
comsol.ht.com.au
LACIE
lacie.ht.com.au
MAXTOR
maxtor.ht.com.au
PINNACLE
pinnacle.ht.com.au
SANDISK
sandisk.ht.com.au
SEAGATE
seagate.ht.com.au
SONY
sony.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

SanDisk Cruzer Micro U3

- Retractable USB connector
- Brilliant amber LED
- U3 smart enabled
- Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)

$136 | 4GB | T8460
$89 | 2GB | T8375
$49 | 1GB | T7526

Sandisk Cruzer Titanium U3

- Capacity: 1GB – 2GB
- Retractable USB connector
- Performance: 15MB/s read speed & 9MB/s write speed
- Rugged Liquidmetal® body
- Crush force exceeds 2000 lbs

$69 | 1GB | T8478
$119 | 2GB | T8480

Kingston DataTraveler Elite Privacy

- Advanced Security via Hardware-based encryption
- User set password with minimum characteristics
- Drive lock down to prevent intrusion attempts
- Fast - data transfer rates of up to 24 MB/sec. read and up to 14 MB/sec. write
- Guaranteed - five-year worldwide warranty

$20 PRICE DROP

$89 | 512MB | U1380
$149 | 1GB | U1381

Comsol SecureID Drives

- High-speed USB 2.0 data transfer
- One time setup
- Password free access via PC authorisation
- Data is auto secured when plugged into an unauthorised computer
- Pre-loaded software
- Traceless use on any PC

NEW

$119 | 2GB | U4753

Sony Micro Vault

- Stylish and compact design
- Plug & Play
- PC-Mac compatibility
- Virtual expander
- Compact and lightweight

$69 | 1GB | T9198
$138 | 2GB | T8547

Pinnacle PCTV Hybrid Pro Stick 320E

Watch TV on your Laptop or PC

- Use TimeShifting to pause live television and start again without missing a second
- Record to your hard drive in MPEG-1/-2 formats
- Direct-to-DVD recording
- Record directly in DivX format
- Remote control access to all your media files

SAVE $10

$229 | T9010

Visit rentsmart.ht.com.au for the latest rent promotion

LaCie 160GB External Portable Hard Drive

The perfect travel companion for carrying your files on the road, the LaCie Mobile Drive delivers generous storage that fits in your pocket. Its durable aluminum body reliably protects your data no matter where you go. Plug it into any computer or laptop with a USB port, whether it's running Windows or Mac. Since it's USB bus-powered, plug & play, it couldn't be easier to use.

- Large 160GB storage capacity
- Hi-Speed USB 2.0
- 4 pin USB,5400 rpm, buffer: 2MB
- Ultra portable slim design
- Sturdy Metal Casing

$229 | U4680

LaCie Rugged Mobile 120G

- High-Speed USB2.0, FireWire 400 & FireWire 800
- 5400RPM 8MB Cache
- Rugged, portable storage for people on the go
- Scratch-protected aluminium shell & shock-resistant rubber bumper
- Weight: 250 grams

$379 | T6203

LaCie 80GB 2.5" Mobile Hard Drive

- Universal USB and FireWire connectivity
- Lightweight, portable design
- Bus-powered* - AC adapter not required
- 5400 RPM 8MB Cache
- Weight: 200 grams

SAVE $30

$249 | S1929

Maxtor OneTouch III 100GB 2.5" Mini Edition

- USB 2.0 and 1.1 compliant interface
- 5400RPM 8M Cache
- Maxtor OneTouch button—the easy way to make backup copies of your files
- Two levels of security with Maxtor DriveLock and Encryption to safeguard against unauthorised use

$199 | T6328

LaCie USB Key (Black) 8GB

- Credit card-sized storage that fits in your pocket
- Compact, ultra-slim, durable metal design
- Hi-Speed USB 2.0 bus-powered; plug & play
- Driver-free for Windows 2000/ XP & Mac OS X

$229 | U4200

Digital Notetakers

JNC 128MB Digital Voice Recorder & MP3 Player

- PC & MAC compatible
- Support MP3/ WMA and MP3 encoding
- FM stereo radio
- 8 folders to organise Files (Each Folder Stores up to 128 files)
- 2 modes (automatic recording system)

$199 | U4744

JNC 32MB Digital Voice Recorder

- USB Interface
- Voice operated recording
- PC files storage
- Built-In speaker and microphone

$149 | U4957

Sony Digital MP3 Notetaker

- 512MB capacity
- Up to 251hrs of recording
- Built-in USB plug
- MP3 player functionality
- Drag' n Drop operation

$249 | U0811

Hard Drives...

Seagate

Seagate Mirra Sync and Share Personal Server Drive

Breakthrough File Management and Protection Storage Solution. Mirra combines an always-on network server with powerful software and online services. Together, this system allows you to easily manage, protect, share, sync and enjoy all your valuable files and data—from anywhere.

- Sync content automatically between PCs and/or Macs
- Securely share content with co-workers, customers, friends and family with password protection and controlled access features
- MirraGuard Data Protection Guarantee protects you from data loss if your PC or Mac hard drive fails

$799 | 500GB
U0614 | RENT $9.24/wk*

web links

EVOCEPT
evocept.ht.com.au
LACIE
lacie.ht.com.au
MAXTOR
maxtor.ht.com.au
RENTSMART
rentsmart.ht.com.au
SEAGATE
seagate.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

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Some of the items on this page are indicated as delivery only. Some charges apply. See page 62 for details.

Delivery only Charges Apply

Maxtor Shared Storage II

Maxtor

- Automated back up for photos, music, video and data on networked PCs and Macs to one location
- Automatic mirroring of 500GB data
- Access files from multiple PCs and Macs simultaneously
- Easy installation with automatic network configuration
- Set privacy levels for shared folders with easy browser interface

SAVE $60

$1069 | 1TB

Maxtor One Touch III Turbo External Hard Drive

Maxtor

MASSIVE 1TB STORAGE

- User-configurable RAID solution. Use RAID 0 for high performance disk striping or RAID 1 for automatic mirroring
- FireWire 800 for fast data transfer
- 7200 RPM, 16MB cache
- Maxtor DriveLock™ protects contents of drive in case of loss or unauthorised use

$799 | 1TB | RAID 0/1
T4613 | RENT $9.24/wk*

Seagate Pushbutton Backup 3.5" EXT Hard Drive 750GB

Seagate

- USB 2.0 and Firewire
- 7200 RPM 16MB Cache
- 350 Gs nonoperating shock resistance
- These high capacity drives make it easy to store and backup your data
- The interlocking design lets you securely expand your Seagate storage

LIMITED STOCK
SAVE $100

$699
T9415 | RENT $8.09/wk*

Maxtor One Touch III External Hard Drive

Maxtor

- USB 2.0 and Firewire
- 7200RPM up to 16MB cache
- Maxtor OneTouch button - the easy way to make backup copies of your files
- Two levels of security with Maxtor DriveLock and Encryption to safeguard against unauthorised use

SAVE $20

$475 | 500GB | U1194

Seagate Barracuda 320GB Internal Hard Drive

Seagate

- Enhanced G-Force Protection defends against handling damage
- Seagate SoftSonic motor enables whisper-quiet operation.
- Adaptive Fly Height offers consistent read/write performance.

$180 | T9020

Seagate Barracuda 80GB Internal Hard Drive

Seagate

- 7200 rpm Spindle speed
- High data transfer rate up to 100MB per second
- On the fly error correction algorithms

$90 | T5304

Over 15,000 products available online, click ht.com.au

LaCie 1TB BigDisk Extreme Triple Interface External Desktop Drive

- FireWire 800, FireWire 400, Hi-Speed USB 2.0
- Built-in RAID 0 for Extreme FireWire 800 speed
- Convenient: Plug & play, stack, rack-mount or stand upright
- Heat-dissipating, ultra-quiet, compact metal design
- One Click back up software for PC & Mac
- The combination of Extreme speed and huge capacity make it ideal for audio/video professionals working on large-scale editing projects or wanting to chain FireWire or iLink DV cameras

$150 PRICE DROP

$799

T6655 | RENT $9.24/wk*

LaCie 500GB 3.5" External Hard Drive

DESIGNED BY PORSCHE

- Hi-speed USB connection
- 7200 RPM 8MB Cache
- Save photos, MP3s, data files
- Stackable to save desk space
- Back up valuable information
- Simple setup and easy to use

$349 | T9416

LaCie 500GB Ethernet Gigabit Mini

- Gigabit Ethernet & USB2.0 interface
- Quick & easy IP configuration
- Expandable capacity through a USB host port
- Users 7 share level permissions
- Jumbo Frame support

NEW

$499 | U4961

LaCie 250GB 3.5" External Hard Drive

LOW PRICE

- USB 2.0
- 7200RPM 2MB Cache
- Compact, lightweight and cost-efficient storage
- Easy storage and access for large digital music, photo, video, personal data and multimedia files
- Whisper-quiet and cool operation

$199 | L8724

LaCie 320GB D2 BigDisk Extreme

- FireWire 800, FireWire 400 & USB2.0 interface
- Slim, Sturdy, heat-dissipating design
- Fan-free design
- Stack, rack-mount or stand upright on your desk
- Driver-free for Mac OS X / Windows 2000, Windows XP
- Kensington lock compatible

NEW CAPACITY

$369 | U4713

CD/DVD Production

evocept

Evocept CopyBlast Tower Burn 7 Drive

- Standalone Disc Duplication Tower
- Up to 16x DVD with dual layer support
- 7 Drive capacity
- 3, 7 and 11 drive models available

$350 PRICE DROP

$1249

T4715 | RENT $14.45/wk*

Burn 7 Drive Pro | $1349 | T4716
Professional Model inc. Hard Drive

Evocept CopyBlast DVD/CD 11 Drive 16x Pro

- Standalone Disc Duplication Tower
- Up to 16x DVD with dual layer support
- 11 Drive capacity
- Includes 160GB Hard Drive

$500 PRICE DROP

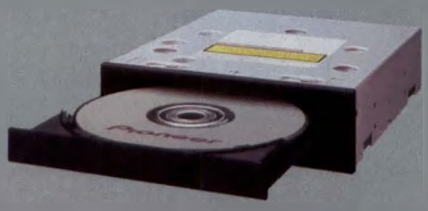
$1799

U4204 | RENT $20.17/wk*

Optical Drives...

Pioneer Internal DVD/CD Writer

- Multi-format compatibility
- Precision recording technology
- Includes Quiet Drive firmware utility
- New noise reducing chassis design



$85 | U1428

Samsung Internal Black 18x Dual Layer DVD Drive

- Stylish and technological design
- Writemaster™ Technology Engine for the best performance
- Interface: EIDE / ATAPI

$99 | U0203

Sony DRU830A Internal Dual Layer DVD±R/RW 18x Drive

- Multiformat Support
- Easy to install and use
- Interchangeable front bezel
- Shortened depth

NEW

$115 | U3894

LaCie DL Lightscribe DVD Drive

- Features exclusive LightScribe for direct disc custom labeling
- Records to Double Layer DVD+R, DVD±R/RW and CD-R/RW
- Masters up to 8.5GB DVD-Videos from your desktop
- Provides fast and simple DVD Recording for PCs

$149 | T3116

LaCie Slim External Double-Layer DVD Drive

- Now with LightScribe Direct Disc Labeler
- Hi-Speed USB 2.0 & double layer technology
- Burn custom CD/DVDs and custom labels anywhere
- Bundled with complete software suites

SAVE $20

$229 | S8317

LaCie d2 DL Lightscribe Super DVD Drive

- Records to Double Layer DVD+R/DVD-R, DVD±R/RW and CD-R/RW
- Masters up to 8.5GB DVD-Videos from your desktop
- Provides Hi-Speed USB and FireWire for both PCs and Macs
- Features LightScribe for direct disc custom labeling

$229 | T3124

Sony External Dual-Layer DVD Drive DRX820UL

- Dual Layer Technology
- 16x DVD±R Capability
- DVD-RAM Support
- Nero[1] Software Suite and Roxio[1] Toast[1] Lite Supplied
- Sleek, practical design

$235 | T7699

Sony Slimline External DVD Drive DRXS50U

- Super slim design
- Supports virtually all DVD and CD formats
- Power-Burn technology
- Easy plug & play connection
- Supplied with comprehensive software suite

$229 | U0611

web links

IMATION
imation.ht.com.au
LACIE
lacie.ht.com.au
PIONEER
pioneer.ht.com.au
SAMSUNG
samsung.ht.com.au
SONY
sony.ht.com.au
VERBATIM
verbatim.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1] Memory stick only

Media...

Imation Disc Stakka C10

imation
Imaginative solutions.

Never waste valuable time searching for discs or files again. The Disc Stakka unit is an automated carousel that stores, protects and retrieves your optical discs including data CDs, DVDs, music and game discs. Each Disc Stakka unit holds up to 100 discs and connects to your computer via USB for power and data. You can stack units up to five high to create a tower that holds up to 500 discs without requiring additional cabling or desk space.

$177 | M4871

Verbatim DVD+R Double Layer 8.5GB 3 Pack Jewel Case

$15 | S8714 Verbatim

Verbatim CD-R 50 Pack

$20 | T7011 Verbatim

Verbatim DVD-RDual Layer 8.5GB 3 Pack Jewel Case

$17 | T3376 Verbatim

Verbatim DVD-R 4.7GB 50 Pack

$36 | T4157 Verbatim

Verbatim Lightscribe 20 Pack

$26 | R8528 Verbatim

Verbatim DVD-R 4.7GB 100 Pack

$69 | T8952 Verbatim

Storage

Imation CD-R - 100 Pack

imation

GREAT VALUE

$39 | P2902

Sony DVD-R 4.7GB - 50 Pack

SONY

$39 | T8549

Sony CD-R - 50 Pack

SONY

$25 | T8953

Media Accessories

Verbatim CD/DVD Markers - 4 Marker Pack

$5.95 | P6818 Verbatim

Verbatim DVD Video Trim case - 25 pack

$10 | T4864 Verbatim

PC Accessories...

Logitech V270 Cordless Bluetooth Notebook Mouse

- No receiver required.
- Mouse works within 10m of your Bluetooth enabled notebook.

$89.95 | U4188

Microsoft Wireless Laser Mouse 8000

- Connect wirelessly upto 30 feet
- Inc a mini BlueTooth transceiver
- Re-chargeable Ni-MH battery

$149 | U4253

Logitech MX Revolution

- Logitech SmartShift™ Technology
- New, revolutionary, hyper-fast scroll wheel
- Precision laser tracking

$179 | T9986

Logitech Cordless Desktop MX 3000 Laser

- Control music or video playback, including playlist shuffle, right from your keyboard
- One-touch media buttons and two-handed navigation controls

$155 | S8950

Logitech Cordless Desktop MX 5000 Bluetooth Laser

- The smart desktop that combines an LCD keyboard display, high-speed Bluetooth wireless hub with SecureConnect technology

$245 | T3579

Logitech QuickCam for Notebooks Deluxe

- Provide a high quality video/audio experience
- High quality VGA video combined with intelligent face tracking keep you the centre of attention
- Compact design with travel case

$99 | U0608

Microsoft LifeCam VX6000

- High definition video (1.3 megapixels) and photos (5.0 megapixels interpolated) show you in the best light
- Built-in microphone
- Windows Live™ call button
- 71-degree wide angle lens

$149 | T9680

Microsoft Wireless Notebook Presenter Mouse 8000

- Smoothly navigate through Microsoft Office PowerPoint & other presentations from upto 30 feet away from the PC
- Use Media Remote for multimedia presentations & control digital entertainment
- Digital Ink gives presentations more impact by highlighting vital information on screen

$149 | U4249

Logitech Harmony 785 Advanced Universal Remote

- Control all your devices with just one button
- Choose "Watch DVD" and the Harmony turns on your TV, DVD, stereo receiver- even presses play!
- Controls 3,500+ brands, 125,000+ devices so you're always in control
- Includes colour LCD display and rechargeable battery

$363 | U0607

Logitech Cordless 2.4 GHz Presenter

- Easy-set LCD timer gives automatic, inaudible warnings at 5 and 2 minutes remaining.
- Extended 50-foot range lets you move around with confidence. - battery life of up to six months
- Convenient on/off switch for total control

$99 | S8331

Logitech Harmony 525 Advanced Universal Remote

- Control your home entertainment system at the touch of only one button
- Easy to use with its activities (watch cable, watch a DVD, play a videogame...)
- With instant access to an internet-based worldwide database of infra-red codes, you can control all devices from all manufacturers

$179 | U0606

web links

ENERGIZER
energizer.ht.com.au
LOGITECH
logitech.ht.com.au
MICROSOFT
microsoft.ht.com.au
PLANTRONICS
plantronics.ht.com.au

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Order online or by phone, pick up in-store to save delivery charges

Microsoft Optical Desktop Elite for Bluetooth

- High performance wireless Bluetooth desktop
- Features ultimate keyboard and mouse navigation with Tilt Wheel technology

$269 | P7009

Logitech diNovo Media Desktop Bluetooth Laser

- Bluetooth® MediaPad
- Combines a numeric pad, calculator & remote control
- LCD display and rechargeable MX laser mouse

$320 | T3582

Logitech QuickCam Fusion

- Monitor front design provides improved eye-to-eye contact
- Provides true 1.3 megapixel sensor quality
- High quality audio via a built-in microphone

$159 | T3586

Logitech QuickCam for Notebooks Pro

- Enjoy natural video conversations from your laptop
- True 1.3 megapixel sensor with RightLight™ technology

$165 | T5700

Plantronics Audio 910 Voyager USB Headset

- Multi-point Voyager headset with WindSmart technology
- Plug and Play USB Bluetooth voice adapter
- Leading softphone integration with PersonoCall software

$199 | U0121

Plantronics Voyager 510SL Headset System

- Convenient One-Touch Control button allows you to seamlessly switch between your office phone and your voice enabled Bluetooth® mobile phone, PDA or laptop
- Noise-cancelling microphone for superior voice transmission
- Up to 6 hours of talk time and up to 100 hours of standby time

$299 | T2548

Logitech Premium USB Headset 350

- Great for multiplayer gaming, voice command and chat, online conferencing, or just listening to music
- Advanced digital USB streaming audio provides superior clarity
- Plush earpads cushion your ears for hours of continuous enjoyment.

$69 | R7934

Logitech Premium Notebook Headset

- Behind-the-head, USB/analogue headset optimised for notebooks
- Adjustable earpieces for a comfortable, secure fit
- Rotating, adjustable, noise-cancelling microphone
- Convenient in-line volume and mute control located on cable

$99 | U1277

Batteries

Energizer Lithium AA Battery 4Pk

$19.98

U0924

Energizer Lithium AA Battery 2Pk

$10.98 | U0923

Energizer Recharge AA Battery 4Pk

$19.98

U0931

Energizer Recharge AA Battery 2Pk

$12.98 | U0930

Energizer Recharge AAA 2PK

$13.98

U0929

Energizer 8Hrs Sliding Charger

$29.98

U0928

Mono Laser... Perfect for Office Networks

Back to work printing promotion

Samsung ML-2571N

SAMSUNG

2 Year On-Site Warranty

The Samsung ML-2571N monochrome laser printer packs professional quality printing into a stylish compact printer.

- Print Speed: up to 24ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 250 sheets
- USB / Ethernet connection
- Monthly duty cycle: 20000 pages

$329 | U0583

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brother.ht.com.au
CANON
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doublea.ht.com.au
HP
hp.ht.com.au
LEXMARK
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SAMSUNG
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[1]Bonus Nokia 6060 mobile phone by redemption from Harris Technology on purchases of the HP 4250N, 4250TN and 4250DTN from 01/02/06 to 28/02/06. Visit **hp.ht.com.au** for redemption form and full details.

[2]Bonus Printer via redemption from HP. See **hp.ht.com.au** for more information.

***Rentsmart:** The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au.**

[3]Purchase the Brother HL5250DN between 15/01/07 & 31/03/07 & receive $50 cashback from Brother. Visit **brother.ht.com.au** for full terms and conditions

Brother HL-2040 Laser Printer

brother

- Print Speed: up to 20ppm (A4)
- Resolution: up to 2400 x 600 dpi
- Capacity: 250 sheets
- Interface: parallel and USB
- Warranty: 1 year

SAVE $50

$99 | R2733

Toner 2500pg yield | $79.95 | R7305

Lexmark E120N Laser

LEXMARK

- Print Speed: up to 19ppm (A4)
- Resolution: up to 600 x 600 dpi
- Memory: 16MB
- Network ready
- Warranty: 1 year

Network Ready

$179 | T7001

Lexmark E240N Mono Laser

LEXMARK

- Print Speed: up to 26ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 250 Sheets
- Memory: 32MB
- Connection: USB/Ethernet connection
- Monthly duty cycle: 15000 pages
- Warranty: 1 year

Network Ready

$299 | T9259

HP 5200 A3 Mono Laser

hp invent

Designed to deliver efficiency and versatility, the HP LaserJet 5200 printer series is an ultra-powerful, wide-format/A3+ laser printer built with flexibility and easy manageability to meet the needs of business workteams.

- Print Speed: up to 35ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 350 sheets
- Memory: 48MB (expandable to 512 MB)
- Connection: parallel, USB
- Monthly duty cycle: 65000 pages
- Warranty: 1 year next day on site

A3 Printer

$1699
T7719 | RENT $19.05/wk*

Also Available:
HP LaserJet 5200N | $2299 | T7698 | RENT $24.93/wk*
HP LaserJet 5200TN | $2799 | U0983 | RENT $29.77/wk*

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1 x HP 17" widescreen notebook | valued at $2500
2 x Nokia 3250 mobile phones | valued at $500 each
2 x Sony DSC-T30 digital cameras | valued at $700 each
For full terms and conditions visit **printeroffers.ht.com.au.**

Authorised under NSW permit No. TPL06/14924 and ACT Permit No.TP06/05550.

BONUS OFFER

If you purchase any ink or toner on the same invoice as the printer, you will receive an additional entry into the draw. Visit **printeroffers.ht.com.au** for more details on how to enter and for full terms & conditions.

HP LaserJet P2015N

- Print Speed: up to 26ppm
- Print Resolution: up to 1200 x 1200 dpi
- Total Media Capacity: 300 sheets
- Memory: 32MB (expandable 288MB)
- Connection: hi-speed USB, Ethernet (embedded print server)
- Monthly duty cycle: 15000 pages per month
- Warranty: 2 year onsite

$699

U4728 | RENT $8.09/wk*

Brother HL-5250DN Mono Laser

- Print Speed: up to 30ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 300 Sheets
- Memory: 32MB
- Connection: USB / Ethernet connection
- Duplex mode for dual sided printouts
- Monthly duty cycle: 20,000 pages
- Warranty: 1 year

$50 Cashback[3]

SAVE $20

$459 | T3555

Canon LBP3360 Mono Laser

- Print Speed: up to 21ppm
- Print Resolution: 2400 dpi x 600 dpi
- Duplex print mode for dual sided printouts
- Total Media Capacity: 250 Sheets
- Memory: 64MB
- USB / Ethernet connection
- Warranty: 1 year

SAVE $20

$559

U0173 | RENT $6.46/wk*

HP 4250N Mono Laser

The HP LaserJet 4250 increases workgroup productivity with fast print speeds up to 45ppm and less than 8 seconds for the first page out. A 460MHz processor, expandable memory, industry-leading internal networking, and genuine HP printing supplies round out this printer's performance features. Embedded Web server and Web Jetadmin assist in the overall manageability of the printer, letting you change settings and run upgrades with ease.

- Print Speed: up to 43ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 600 Sheets
- Memory: 64MB
- Connection: USB/Ethernet connection
- Duplex mode for dual sided printouts
- Monthly duty cycle: 200,000 pages
- Warranty: 2 years

BONUS Nokia 6060 Mobile Phone[1]

$2275

Q2900 | RENT $24.67/wk*

Also Available:
HP LaserJet 4250TN | $2599 | Q2894 | RENT $28.18/wk*
HP LaserJet 4250DTN | $3179 | Q2890 | RENT $33.81/wk*

HP 3000N Colour LaserJet

Its your choice! Switch Colour on or off

BONUS HP Printer[2]

Who prints in colour is now in your hands. You can now switch on or off colour by user, department or application.

- Print Speed: up to 29ppm
- Print Resolution: 600 dpi x 600 dpi
- Total Media Capacity: 350 sheets
- Memory: 128MB (expandable 512 MB)
- Connection: Hi-Speed USB, Ethernet
- Monthly duty cycle: 60000 pages
- Warranty: 2 year onsite

$1349

T3252 | RENT $15.12/wk*

Also Available:
HP 3000DN Colour LaserJet
$1529 | T3254 | RENT $17.14/wk*

***Double A* A4 2500 page box**

$31.90 | T4779

Colour Business Printers...

KONICA MINOLTA

Konica Minolta Magicolor 2530DL

- Print Speed: up to 20ppm Mono and up to 5ppm colour
- Print Resolution: 2400 dpi x 600 dpi
- Total Media Capacity: 200 sheets
- Memory: 64MB (expandable to 576 MB)
- Monthly Duty Cycle: 35000 pages
- Warranty: 2 year on-site

$559

U0076 | RENT $6.46/wk*

web links

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doublea.ht.com.au
FUJI XEROX
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HP
hp.ht.com.au
KONICA MINOLTA
konicaminolta.ht.com.au
LEXMARK
lexmark.ht.com.au
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*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: rentsmart.ht.com.au.

SAVE 10%

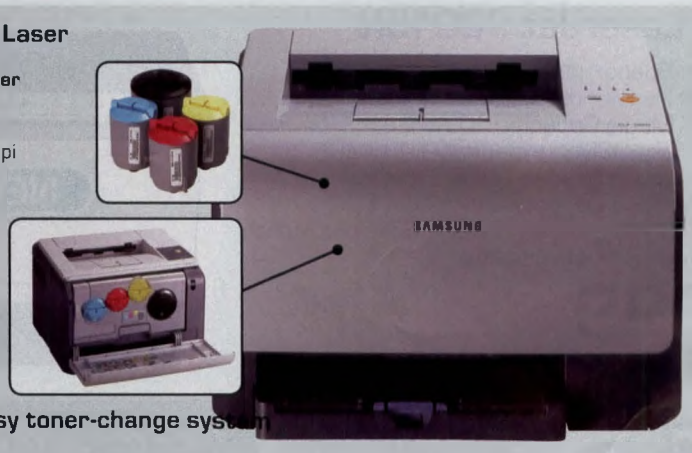
on your next ink or toner purchase

Buy any printer from Harris Technology in February or March 2007, then buy the ink or toner for that printer by the end of April and receive a 10% discount off the purchase price.

Samsung CLP-300N Colour Laser

Worlds smallest colour laser printer

- Print Speed: up to 16ppm
- Print Resolution: 2400 dpi x 600 dpi
- Total Media Capacity: 150 sheets
- Memory: 64MB
- Connection: USB, Ethernet
- Monthly Duty Cycle: 24200 pages
- Warranty: 1 year on-site



Easy toner-change system

$559 | U0104 | RENT $6.46/wk*

Also Available:
Samsung CLP-300 | $459 | U4583

SAMSUNG

Lexmark C500N

LEXMARK

- Print Speed: up to 31ppm
- Print Resolution: 1200 dpi x 600 dpi
- Total Media Capacity: 250 sheets
- Memory : 64MB
- Connection: USB, Ethernet
- Monthly Duty Cycle: 35000 pages
- Warranty: 1 year on-site

$449 | U1367

Lexmark C522N

LEXMARK

- Print Speed: up to 20ppm
- Print Resolution: 1200 dpi x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 128MB (Expandable to 640MB)
- Connection: USB, Ethernet
- Monthly Duty Cycle: 45000 pages
- Warranty: 2 year on-site

$699

U1368 | RENT $8.09/wk*

Fuji Xerox Phaser 8500DN

Unique to Fuji Xerox Printers, Solid Ink technology provides fast, brilliant colour, all while being environmentally friendly. The high-performance Phaser 8500DN uses solid blocks of ink rather than toner, so it creates 90 percent less waste than a laser printer.

- Print Speed: up to 24ppm, 6 seconds to first page out
- Resolution: 1200 FinePoint ™, 600 x 600 dpi
- Processor: 600MHz Power PC, up to 512MB RAM, Adobe PostScript 3 and PCL5c
- Duty Cycle: up to 85,000 pages /maximum monthly duty cycle
- Warranty: 1 year on-site

COME IN TO THE FORTITUDE VALLEY, NORTH RYDE, ALEXANDRIA OR HAWTHORN BUSINESS CENTRE FOR A DEMONSTRATION

$1999

T3440 | RENT $22.40/wk*

FUJI XEROX

Visit rentsmart.ht.com.au for the latest rent promotion

Printers

Fuji Xerox Docuprint C525A

Amazing colour and fast black and white print. The DocuPrint C525A offers great value for you who needs high speed black and white print and high quality colour outputs at a small price.

- Print Speed: up to 25ppm mono and 5ppm colour
- Print resolution: 600 dpi x 600 dpi
- Total Media Capacity: 200 sheets
- Connectivity: Parallel, USB, Ethernet
- Memory: 64MB
- Warranty: 1 year

$399 | R6445

FUJI XEROX

SAVE 10% ON ALL HP 3000, 3600, 3800 SERIES COLOUR LASERJET PRINTERS

PART	PRICE	SAVE
T3243 | 3600	$835	$94
T3244 | 3600N[1]	$989	$110
T3250 | 3600DN[1]	$1,349	$150
T3251 | 3000	$1,099	$130
T3252 | 3000N[1]	$1,349	$150
T3254 | 3000DN[1]	$1,529	$170
T3255 | 3800	$1,159	$130
T3256 | 3800N[1]	$1,394	$155
T3258 | 3800DN[1]	$1,799	$200

[1]Bonus printer promotion via redemption from HP. $19.95 P&H fees apply

HP Colour LaserJet 1600

Print Speed: up to 8ppm mono and colour
Print Resolution: 600 dpi x 600 dpi
Total Media Capacity: 250 sheets
Memory: 16MB
Connection: USB
Monthly Duty Cycle: 20000 pages
Warranty: 1 year

$469 | T6120

HP Colour LaserJet 2600N

CLJ2600n has the same specifications as **CLJ1600**
PLUS Standard Networking
PLUS Higher Duty Cycle
PLUS Mac/Apple OS support
INCLUDES Higher yield toner capable of producing 4500 more pages

$589 | S2505 | RENT $6.81/wk*

HP 2605DN Colour Laserjet Printer

- Print Speed: up to 12ppm mono and 10ppm colour
- Resolution: 600 dpi x 600 dpi
- Memory: 64 MB [320 MB]
- Total Media Capacity: 250 sheets
- Connection: Hi-Speed USB, Ethernet 10/100Base-TX
- Duplex/Networked
- Monthly Duty Cycle: 35000 pages
- Warranty: 1 year

$799 | T7115 | RENT $9.24/wk*

Also Available | HP Colour Laserjet 2605DTN
$899 | T7113 | RENT $10.40/wk*

6 Smart Reasons to Rent

- Affordable monthly repayments
- Save your money
- Tax deductible
- Always have the latest equipment
- Get more equipment
- Fast approval

RENTSMART Because buying isn't

Multifunction Laser/Fax...

Canon MF8180c Colour Laser MFP

- Print & Copy Speed: up to 19 ppm mono/4ppm colour
- Print Resolution: up to 600 dpi
- Scan Resolution: 1200 x 2400 dpi
- Total Media Capacity: 250 sheets
- Connection: hi-speed USB, Ethernet
- Warranty: 1 year

$1199
T6868 | RENT $13.87/wk*

Canon advanced simplicity

Samsung SCX-4200 Mono Laser 3-in-1 MFP

- Print & Copy Speed: up to 18ppm
- Print Resolution: up to 600 x 600 dpi
- Scan Resolution: 600 x 2400 dpi
- Total Media Capacity: 250 sheets
- Connection: hi-speed USB
- Warranty: 1 year

SAMSUNG

$259
T6637

Samsung SCX-4521F Mono Laser 4-in-1 MFP

- Print & Copy Speed: up to 20ppm
- Print Resolution: up to 600 x 600 dpi
- Scan Resolution: 600 x 600 dpi
- Memory: 16MB
- Total Media Capacity: 250 sheets
- Connection: hi-speed USB, Parallel
- Warranty: 1 year

SAMSUNG

$399
T6638

HP 3050 All-in-One

- Print/copy/scan/fax
- Print Speed: up to 18ppm
- Print Resolution: up to 1200 dpi
- Scan Resolution: 600 x 600 dpi
- Connection: hi-speed USB
- Memory: 64MB
- Warranty: 1 year

$499 | T4389

HP 3055 All-in-One

- Print/copy/scan/fax
- Print speed: up to 18ppm
- Print Resolution: up to 1200 dpi
- Scan resolution: 600 dpi
- Connection: hi-speed USB, Ethernet
- Windows and Mac compatible
- Warranty: 1 year

$749
T4390 | RENT $8.66/wk*

HP 3392 All-in-One

- Print/copy/scan/fax
- Print speed: up to 21ppm
- Print Resolution: up to 1200 dpi
- Scan resolution: 600 dpi
- Connection: hi-speed USB, Ethernet
- Memory: 128MB
- Warranty: 1 year

$1299
T6059 | RENT $15.03/wk*

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brother.ht.com.au
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[1] Offer available from 28/11/06 to 28/02/07 via redemption from HP. See **hp.ht.com.au** for full terms and conditions.

[2] Offer available from 01/12/06 to 28/02/07 via redemption from HP. P&H fee of $19.95 apply. Visit **www.hp.com.au/laserjetpromotions** for full promotion and redemption terms and conditions.

***Rentsmart**: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au**.

Lexmark X342N Mono Laser Multifunction

- Print/copy/scan/fax
- Print speed: up to 25ppm
- Print Resolution: up to 600 x 600 dpi
- PCL 5e, PCL 6, PostScript 3 support
- Scan resolution: 600 dpi
- Connection: hi-speed USB, Ethernet
- Memory: 64MB
- Warranty: 2 years

$549 | T9729

LEXMARK

Epson AL-CX11NF Colour Laser MFP including Fax

- Print/copy/scan/fax
- Print & Copy Speed: up to 25ppm (Mono)
- Print Resolution: up to 2400 dpi
- Scan Resolution: 600 x 600 dpi
- Total Media Capacity: 250 sheets
- Connection: hi-speed USB & Ethernet
- Warranty: 1 year on-site

$1399
S8454 | RENT $15.69/wk*

EPSON

Order online or by phone, pick up in-store

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Printers

HP Colour LaserJet 2840

- Print/copy/scan/fax
- 7-in-1 card reader
- Print speed: up to 19ppm (mono) up to 4ppm (colour)
- Print Resolution: up to 600 x 1200 dpi (mono)/up to 600 x 600 dpi (colour)
- Scan Resolution: 1200 x 1200 dpi
- Connection: hi-speed USB, Ethernet
- Warranty: 1 year onsite
- Windows and Mac compatible

BONUS $100 CASHBACK[1]

$1499

S1217 | RENT $16.81/wk*

HP Colour LaserJet CM1015 Multifunction

BONUS $80 CASHBACK[1]

- Printer/copier/scanner
- 6-in-1 card reader
- Up to 600 x 600 dpi mono & colour print resolution
- Supports PCL 6, PostScript 3, PCL 5c
- Up to 8ppm (mono) /up to 8ppm (colour)
- Scanning resolution 1200 x 1200 dpi
- Hi-Speed USB
- Windows and Mac compatible
- 1 year warranty

$979 | U0876 | RENT $11.33/wk*

HP Colour LaserJet CM1017 Multifunction

For more value consider the Color Laserjet CM1017

CM1017 has the same specifications as **CM1015** **PLUS** Ethernet 10 Base-T/100 Base-TX

BONUS $80 CASHBACK[1]

$1229 | U0877 | RENT $14.22/wk*

Brother MFC-7420

- Print/copy/scan/fax
- Print & Copy Speed: up to 20ppm
- Print Resolution: up to 2400 x 600 dpi
- Scan Resolution: 600 x 2400 dpi
- Total Media Capacity: 250 sheets
- Connection: Parallel, USB
- Warranty: 1 year

$459 | R5744

Also Available:
Brother MFC-7220 | $365 | S2370

Canon ImageClass MF5770 All in One

- Printer/copy/scan/fax
- Print & Copy Speed: up to 20ppm
- Print Resolution: up to 1200 x 600 dpi
- Scan Resolution: 1200 x 2400 dpi
- Total Media Capacity: 250 sheets
- Connection: Hi-Speed USB, Ethernet
- Warranty: 1 year

$599

S8188 | RENT $6.93/wk*

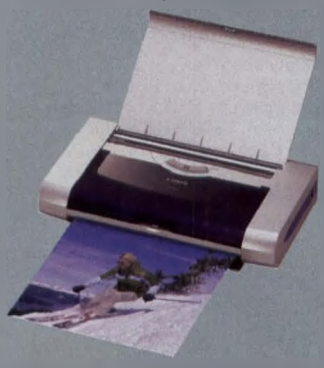
Brother Fax 2820 Laser Fax

- Printer/copier/fax
- Print & Copy Speed: up to 15ppm
- Print Resolution: up to 1200 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 8MB
- Fax Transmission speed: 14.4 Kbps
- Connection: USB
- Warranty: 1 year

$349 | S1320

Single Function Inkjet Printers...

Canon iP90 Portable Bubblejet



Perfect mobile printing solution

- Print Speed: 16ppm mono 12ppm colour
- Resolution: 4800 x 1200 dpi
- FINE print head technology for impressive speed & photo quality
- PictBridge ready - connect & print!
- Optional Bluetooth adaptor for wireless printing

$429 | R8579

Also available:
Car charging kit | NO292 | **$127**

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[1]By redemption from Canon. For full terms and conditions visit **canon.ht.com.au**. Valid for purchases made between 01/11/06 to 28/02/07.

[2]Purchase any eligible HP printer between 28/11/06 and 28/02/07 and receive up to $150 cashback, via redemption from HP. Final claims MUST be received by 5pm EST 6/03/2007 to be eligible for your cash back. Limit of 3 claims per person/company. Terms and conditions apply.

*Rentsmart: The figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see: **rentsmart.ht.com.au.**

SAVE 10%

on your next ink or toner purchase

Buy any printer from Harris Technology in February or March 2007, then buy the ink or toner for that printer by the end of April and receive a 10% discount off the purchase price.

Canon Pixma 830

- Print/copy/scan/fax
- Print: up to 30ppm mono and 24ppm colour
- Copy: up to 29cpm mono and 24ppm colour
- Resoulution: 9600 x 2400 dpi print resolution
- 5 individual ink cartridges
- 2.5" colour graphic display

$539 | T6987

BONUS $50 CASHBACK[1]

Epson Stylus CX5700F Multifunction

- Print: up to 20ppm mono and 19ppm colour
- Copy: up to 18cpm mono and 17cpm colour
- Resolution: 5760 x 1440 dpi
- Maximum fax transmission speed: 33.6Kbps
- Scanning: 1200 x 2400 dpi
- Manufacturer warranty: 1 year

GREAT VALUE

$199 | T5925

HP OfficeJet Pro K550DTN

BONUS $100 CASHBACK[2]

- Print speed: up to 37ppm
- Resolution: up to 4800 x 1200 dpi
- Memory: 32MB RAM
- Trays input: 250 sheet tray, 350 sheet tray
- Duplex: automatic two-sided printing accessory
- 7500 page duty cycle

$429 | T4312

Also available:
OfficeJet Pro K550 | T3724 | $329

HP Officejet Pro K850 DN

A3 PRINTER

BONUS $150 CASHBACK[2]

- Print speed: up to 24ppm mono and 21ppm colour
- Resolution: up to 4800 x 1200 dpi
- Memory: 32MB RAM
- Trays input: 250 sheet tray, 350 sheet tray
- Duplex: automatic two-sided printing accessory

$779

T7664 | RENT $9.01/wk*

Also available:
HP K850 | T7665 | $579 | RENT $6.70/wk*

Multi-Function Inkjet Printers...

Epson Stylus Photo R800 Printer

EPSON EXCEED YOUR VISION

- Print Speed: up to 17ppm mono/ 8ppm colour
- Print Resolution: 5760 dpi x 1440 dpi
- Total Media Capacity: 120 sheets
- Connection: 1 x Hi-Speed USB - 4 PIN USB Type B 1 x IEEE 1394 (FireWire)
- Warranty: 1 year

$599 | N9471 | RENT $6.93/wk*

Epson Stylus R1800 A3 8 ink Photo Printer

EPSON EXCEED YOUR VISION

- Print Speed: up to 13ppm mono A4/ up to 6.5ppm colour
- Print Resolution: 5760 dpi x 1440 dpi
- Total Media Capacity: 120 sheets
- Connection: IEEE1394 FireWire, Hi-Speed USB
- Borderless printing, CD/DVD printing
- Warranty: 1 year

$999 | S0287 | RENT $11.56/wk*

HP Deskjet 460 CB Portable Printer

hp invent

Experience true mobility with HP's fully-featured mobile printer that delivers optional Wi-Fi wireless connectivity and high-quality printing for documents and photos.

- Print Speed: up to 17ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 50 sheets
- Memory: 32MB
- Connection: USB
- Monthly duty cycle: 500 pages

$449 | T3509

Canon Pixma IP5300 Photo Printer

Canon advanced simplicity

- Print Speed: up to 31ppm mono/ 24ppm colour
- Print Resolution: 9600 dpi x 2400 dpi
- Total Media Capacity: 300 sheets
- Connection: Hi-speed USB
- Dual sided printing
- Warranty: 1 year

$249 | U1563

Also Available:
Canon IP4300 | U1469 | **$199**

Scanners

Canon LIDE70 Flatbed Scanner

Canon advanced simplicity

Fast, high quality scanning for those with no time to waste.

- High quality scanning up to 2400 x 4800dpi high resolution and 48 bit superior gradation
- Automatic dust and scratch, fading, graininess correction
- Backlight correction available for reflectives
- Advanced Z-Lid and scanning in the upright position
- Warranty: 1 year

$149 | U1812

Epson V100 Perfection Photo Scanner

EPSON EXCEED YOUR VISION

- Advanced Epson Dual Lens System
- 6400dpi film scanning
- DIGITAL ICE and DIGITAL ICE Lite Technologies
- On-board ASIC for dedicated image processing
- Optical Density of 4.0 Dmax
- Features IEEE1394 (Firewire) and USB 2.0 for high speed scanning for both Windows and Macintosh users
- 1 year warranty

$239 | U0123

HP Scanjet 4850 Photo Scanner

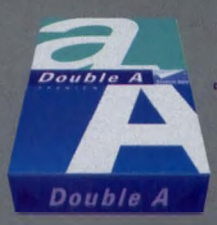
hp invent

- Scan Resolution: 4800 x 9600 dpi
- 48-bit colour
- Integrated Transparent Materials Adapter (TMA) for four 35mm slides or six negatives
- 4 button front panel (Scan, Scan Film, Copy, Scan to Share)

$298 | T3132

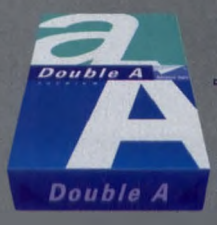
Toner cartridges & Inkjet cartridges...

Double A A4 500 page ream



$6.49 | T4776

Double A A3 500 page ream



$18.95 | T4777

Double A A4 2500 page box

$31.90 | T4779

web links

BROTHER
brother.ht.com.au
CANON
canon.ht.com.au
EPSON
epson.ht.com.au
HP
hp.ht.com.au
SAMSUNG
samsung.ht.com.au
KONICA MINOLTA
konicaminolta.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1]Visit **konicaminolta.ht.com.au** for the list of selected cartridges.

SAVE 10%

on your next ink or toner purchase

Buy any printer from Harris Technology in February or March 2007, then buy the ink or toner for that printer by the end of April and receive a 10% discount off the purchase price.

INKS

EPSON

HT Part	Vendor Part	Colour	Price
96455	C13T007091	Black	$29.95
96456	C13T009091	Colour	$42.95
A0630	C13T008091	Colour	$29.95
F3542	C13T034890	Matte Black	$19.95
F3543	C13T034290	Cyan	$19.95
F3544	C13T034390	Magenta	$19.95
F3545	C13T034490	Yellow	$19.95
F3546	C13T034590	Light Cyan	$19.95
F3547	C13T034690	Light Magenta	$19.95
F3548	C13T034790	Light Black	$19.95
L7022	C13T047390	Magenta	$14.95
L7024	C13T047490	Yellow	$14.95
L7025	C13T047290	Cyan	$14.95
L7026	C13T046190	Black	$19.95
M0952	C13T049190	Black	$19.95
M1054	C13T049290	Cyan	$19.95
M1055	C13T049590	Light Cyan	$19.95
M1056	C13T049390	Magenta	$19.95
M1060	C13T049690	Light Magenta	$19.95
M1063	C13T049490	Yellow	$19.95
N9686	C13T054890	Matte Black	$19.95
N9687	C13T054190	Photo Black	$19.95
N9689	C13T054090	Gloss Optimizer	$9.95
N9690	C13T054290	Cyan	$19.95
N9692	C13T054390	Magenta	$19.95
N9694	C13T054490	Yellow	$19.95
N9706	C13T054790	Red	$19.95
N9707	C13T054990	Blue	$19.95
T3404	C13T063190	Black	$16.95
T3408	C13T063290	Cyan	$14.95
T3409	C13T063390	Magenta	$14.95
T3410	C13T063490	Yellow	$14.95

Canon

N6587	BCI6G	Green	$24.95
D3232	BCI24BK	Black	$14.95
H8779	BCI15BK	Black	$24.95
R9653	BCI16C	Colour	$44.95
S9562	PGI5BK	Black	$24.95
S9563	CLI8C	Cyan	$26.95
S9564	CLI8M	Magenta	$26.95
S9565	CLI8Y	Yellow	$26.95
S9587	CLI8BK	Photo Black	$26.95
T4497	CLI8VP	Value Pack	$99.95
81586	BCI3EBK	Black	$21.95
81587	BCI3EC	Cyan	$19.95
81588	BCI3EM	Magenta	$19.95
81589	BCI3EY	Yellow	$19.95
C3420	BCI6BK	Black	$24.95
C3424	BCI6C	Cyan	$24.95
C3426	BCI6M	Magenta	$24.95
C3428	BCI6Y	Yellow	$24.95
C3429	BCI6PC	Photo Cyan	$24.95
C3430	BCI6PM	Photo Magenta	$24.95
N0339	BCI6R	Red	$24.95

hp

HT Part	Vendor Part	Colour	Price
21919	51629AA	Black	$56.95
22331	51649AA	Colour	$49.95
22643	51645AA	Black	$49.95
70165	C4844AA	Black	$59.95
A2595	C6615DA	Black	$47.95
B1725	C4836AA	Cyan	$54.95
B1728	C4838AA	Yellow	$54.95
B1729	C4837AA	Magenta	$54.95
F9886	C6657AA	Colour	$56.95
G0251	C8727AA	Black	$32.95
J6262	C5010DA	Colour	$56.95
Q1676	C8766WA	Colour	$44.95
Q1677	C8767WA	Black	$52.95
Q1680	C8765WA	Black	$34.95
Q1870	C9363WA	Colour	$56.95
S0694	Y2025AA	Black	$56.95
S3034	C6578DA	Colour	$56.95
S5192	Y2017AA	Black Combo	$47.95
T0852	C9351AA	Black	$27.95
T1633	C8721WA	Black	$29.95
T1634	C8772WA	Magenta	$18.95
T1635	C8771WA	Cyan	$18.95
T1636	C8773WA	Yellow	$18.95
T1637	C8774WA	Light Cyan	$18.95
T1639	C8775WA	Light Magenta	$18.95
T7733	C9364WA	Black	$29.95

brother

Q1657	LC-47BK	Black	$34.95
T7160	LC-47BKTWIN	Black	$54.95
Q1659	LC-47C	Cyan	$19.95
Q1660	LC-47M	Magenta	$19.95
Q1661	LC-47Y	Yellow	$19.95

VISIT ink.ht.com.au

for our full range of available Inks & Toners

Visit rentsmart.ht.com.au for the latest rent promotion

Harris Technology has a wide range of ink, toner and paper consumables at competitive prices from all leading brands. Shopping for your consumables is easy - **Call**, **Click** or **Visit** one of our **8 Business Centres.**

TONERS

brother

HT Part	Vendor Part	Colour	Yield	Price
T3576	TN-3185	Black	7000	$119
R7305	TN-2025	Black	2500	$79.95
N1557	TN-3030	Black	7000	$84.95
N1558	TN-3060	Black	6700	$119
D8989	TN-8000	Black	2200	$49.95
95205	TN-6600	Black	6000	$119
M9543	TN-04BK	Black	10000	$224
M9544	TN-04C	Cyan	6600	$224
M9545	TN-04M	Magenta	6600	$224
M9546	TN-04Y	Yellow	6600	$224
C6970	TN-7600	Black	6500	$124
94457	TN-200	Black	2200	$49.95

Canon

HT Part	Vendor Part	Colour	Yield	Price
87989	EP22CART	Black	2500	$87.95
L7104	EP26CART	Black	2500	$114
Q6538	CARTU	Black	2500	$109
S1818	CART303	Black	2500	$99.95
T6876	CART308	Black	2500	$99.95
S7054	FX9	Black	2000	$124
S1412	CART301BK	Black	5000	$144
J2817	EP87BK	Black	5000	$124

EPSON

HT Part	Vendor Part	Colour	Yield	Price
F4973	S050087	Black	6000	$239
G9705	C13S050100	Black	4500	$114
G9708	C13S050097	Yellow	4500	$249
R4237	C13S050190	Black	4000	$119
Q4472	C13S050187	Yellow	4000	$189
R4241	C13S050189	Cyan	4000	$189
R4242	C13S050188	Magenta	4000	$189

KONICA MINOLTA

HT Part	Vendor Part	Colour	Yield	Price
F8852	1710517-005	Black	4500	$145
F8855	1710517-008	Cyan	4500	$219
F8853	1710517-006	Yellow	4500	$219
F8854	1710517-007	Magenta	4500	$219
M0897	1710567-003	Black	6000	$169
R0704	1710590-005	Yellow	4500	$219
R0707	1710590-007	Cyan	4500	$219
R0703	1710590-004	Black	4500	$154

hp invent

HT Part	Vendor Part	Colour	Yield	Price
72653	C4195A	Black	6250	$129
C0936	C7115A	Black	2500	$99.95
D0031	C7115X	Black	3500	$129
L0381	Q2612A	Black	2000	$119
N8595	Q3960A	Black	5000	$139
N8600	Q3964A	Black/ Colour	20000/ 5000	$284
N9527	Q3961A	Cyan	4000	$164
N9528	Q3962A	Yellow	4000	$164
N9532	Q3963A	Magenta	4000	$164
P9322	Q5949A	Black	2500	$124
P9323	Q5949X	Black	6000	$219
Q4118	Q6511A	Black	6000	$199
Q4121	Q6511X	Black	12000	$349
Q4123	Q5942A	Black	10000	$224
S5168	Q6000A	Black	2500	$129
S5170	Q6001A	Cyan	2500	$139
S5171	Q6002A	Yellow	2500	$139
S5172	Q6003A	Magenta	2500	$139

LEXMARK

HT Part	Vendor Part	Colour	Yield	Price
T7314	12017SR	Black	2000	$109
L5690	18S0090	Black	3200	$109
T9775	X340H11G	Black	6000	$199

SAMSUNG

HT Part	Vendor Part	Colour	Yield	Price
J2380	ML-1710D3	Black	2500	$99.95
J9653	SCX-4216D3	Black	3000	$129
M9755	CLP-500D7K	Black	7000	$149
M9756	CLP-500D5C	Cyan	5000	$179
M9757	CLP-500D5M	Magenta	5000	$179
M9758	CLP-500D5Y	Yellow	5000	$179
S2534	CLP-510D7K/SEE	Black	7000	$174
S2536	CLP-510D5C	Cyan	5000	$189
S2537	CLP-510D5M	Magenta	5000	$189
S2538	CLP-510D5Y	Yellow	5000	$189
T0776	ML-2010D3/SEE	Black	3000	$129
T6647	SCX-4521D3/SEE	Black	3000	$124

FUJI XEROX

HT Part	Vendor Part	Colour	Yield	Price
R6900	CT200649	Black	4000	$114
R6901	CT200650	Cyan	4000	$194
R6902	CT200651	Magenta	4000	$194
R6903	CT200652	Yellow	4000	$194
T3238	CWAA0649	Black	2500	$74.95

All your accounting needs covered...

MYOB Premier v10

- Provides advanced inventory, payroll and business management capabilities to medium-sized companies
- Automates your pay runs, calculates PAYG withholdings and superannuation, and updates all your accounts automatically
- Provide hourly, salaried, overtime, bonus, commission and advanced payments
- Allows multiple people to access your business information simultaneously

BONUS Norton Internet Security 2007 3 User and Microsoft Wireless Optical Desktop Elite[1]

$1245 | U0172

web links

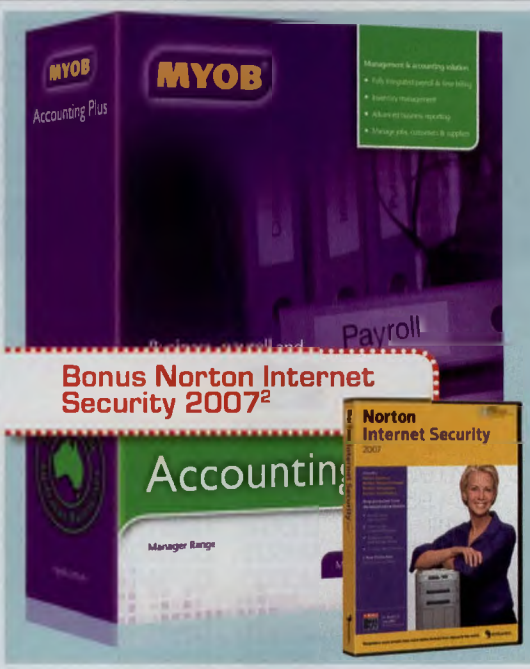
ACT!
act.ht.com.au
MYOB
myob.ht.com.au
QUICKEN
quicken.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1] Purchase a full version of MYOB Premier between 08/01/07 & 16/03/07 and be eligible to receive Norton Internet Security 2007 3 User (DVD Case) + Microsoft Wireless Optical Desktop Elite by redemption from MYOB. For terms & conditions see **myob.ht.com.au**.

[2] Purchase specially marked full versions of MYOB software between 08/01/07 & 16/03/07 and be eligible to receive Norton Internet Security 2007 (DVD Case) by redemption from MYOB. For terms & conditions see **myob.ht.com.au**.

[3] Purchase full versions of specially marked Quicken software between 08/01/07 & 18/03/07 and receive a cashback of up to $500 by redemption from Quicken. See **quicken.ht.com.au** for full terms and conditions.



MYOB Accounting Plus v16

- Automate your payroll
- Bill for your time
- Control inventory
- Process sales and purchases,
- Manage receivables and payables
- Track GST and BAS
- Prepare budgets
- Email your quotes and invoices
- Comprehensive business reporting and more

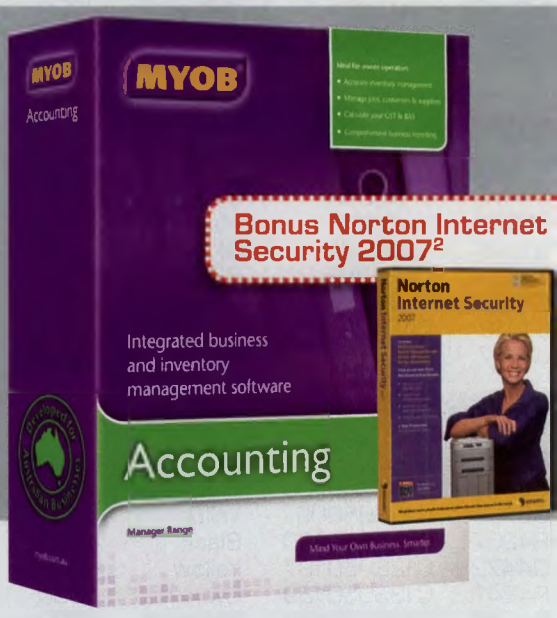
$465 | FULL | U0170

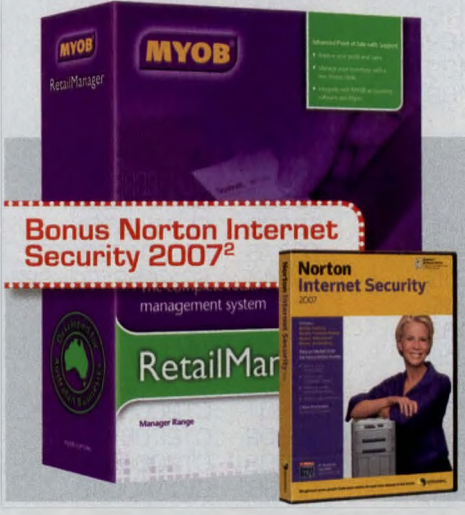
$309 | UPGRADE | U0176

MYOB Accounting v16

- Streamline your accounts procedures with this integrated business and inventory management software for sole traders
- Have your ABN automatically entered on all necessary invoices and forms
- Create professional tax invoices quickly
- Handle a variety of Australian-specific taxes
- Generate reports showing all GST collected and paid
- Tracks GST, simplifies BAS reporting and provides advanced business reporting
- Create quotes, orders, and invoices, and choose from several customisable invoice layouts

$299 | U0169





MYOB RetailManager 9

If you're determined to succeed in your Retail business, you need MYOB RetailManager

- Fast customer service
- Advanced inventory management
- Manages promotions easily
- Reports your sales & profit drivers with just a few clicks
- Includes 12 months of 7 day a week support & upgrades
- Integrates with MYOB Accounting, Accounting Plus & Premier

$1729 | U1388

3 WAYS TO SHOP | CALL CLICK VISIT

harristechnology

Software

QuickBooks Plus 2006/07

QuickBooks Plus is perfect for small businesses with employees –it includes integrated payroll and inventory management.

- Invoice, pay bills and track expenses
- Process credit card statements
- Track inventory
- Integrated payroll management
- Integrated BAS and online lodgment
- Includes 12 months upgrades and support

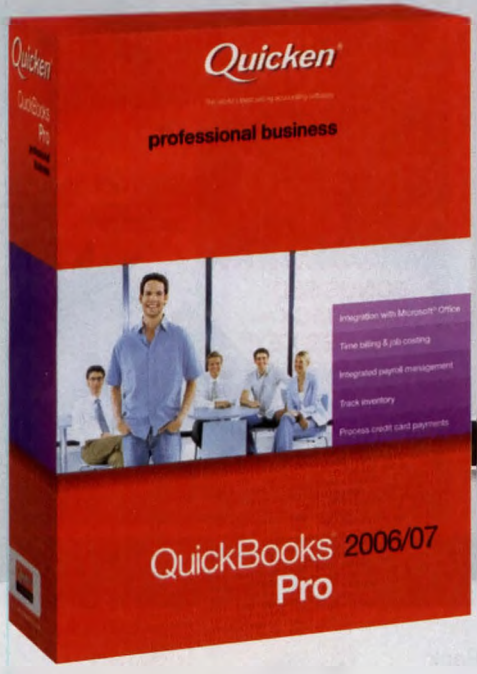
$150 CASHBACK OFFER[3]

$349 | T6294

BEFORE CASHBACK | YOU PAY $499

QuickBooks Pro 2006/07

- Easy-to-use tools and the latest tax tables needed to help manage and maintain control of your payroll
- Quickly and easily manage basic tasks like printing cheques, paying bills, generating reports, invoicing customers and tracking expenses
- Process credit card statements
- Time billing and job costing
- Integration with Microsoft Office
- Multi user enabled
- Integrated payroll management
- Includes 12 months upgrades and support



$200 CASHBACK OFFER[3]

$499 | T6297

BEFORE CASHBACK | YOU PAY $699

QuickBooks Premier 2006/07

- Time billing and job costing
- Integration with Microsoft Office
- Multiple currency
- Up to 5 simultaneous users
- Industry specific versions
- Easy-to-use tools and the latest tax tables needed to help manage and maintain control of your payroll
- Includes 12 months upgrades and support

$500 CASHBACK OFFER[3]

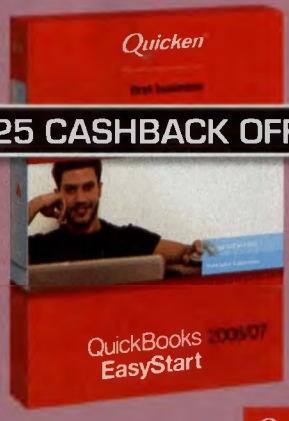
$899 | T6300

BEFORE CASHBACK | YOU PAY $1399

QuickBooks EasyStart 2006/07

QuickBooks EasyStart is a breakthrough in simple bookkeeping for new and home-based businesses. Designed for first-time users of accounting software, EasyStart makes it easy to get started with simple, practical tools to manage essential business tasks.

- Track sales and expenses
- Manage GST and BAS
- Personalise customer invoices with your company logo
- Reconcile your bank account
- Extensive help menu available from within the software program



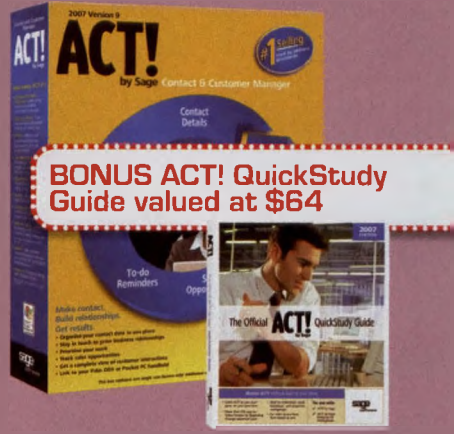
$25 CASHBACK OFFER[3]

$70 | T6292

BEFORE CASHBACK | YOU PAY $95

ACT! 9.0 Retail PLUS
BONUS ACT! QuickStudy Guide

With more than 2.5 million users, ACT! is the #1 selling contact and customer manager that helps you make contact, build relationships, and get results. Everything you want to know about ACT! is available in the 560-page Official ACT! Quick Study Guide to help you sharpen your ACT! skills and boost productivity! So take advantage of this offer and join the ACT! community today!


ACT!
2007 Version 9
by Sage Contact & Customer Manager
BONUS ACT! QuickStudy Guide valued at $64
The Official ACT! QuickStudy Guide

$255 | U4956

Internet security...

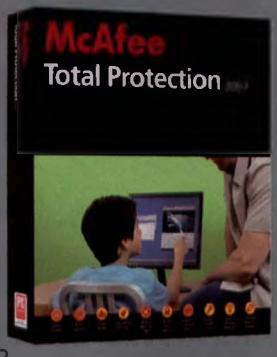
TrendMicro Internet Security 2007

- 3 PCs protected for the price of 1
- Advanced spyware protection
- Antivirus security
- Free updates and telephone support
- Home network control
- Parental and Content Controls
- Personal firewall
- Phishing fraud defence
- Spam filtering

$99 | FULL | 3USER | U0389

McAfee Total Protection 2007

- Improved McAfee anti-virus, anti-spyware, firewall and anti-spam security
- 10-in-1 protection and complete online and PC security



$109 | U0343

web links

CA
ca.ht.com.au
KASPERSKY
kaspersky.ht.com.au
MANACCOM
manaccom.ht.com.au
MCAFEE
mcafee.ht.com.au
SYMANTEC
symantec.ht.com.au
TREND MICRO
trendmicro.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1]Purchase a full version of Trend Micro Internet Security 2007 3 User between 01/01/07 and 28/02/07 and be eligible to redeem a USB Kit from Manaccom. See **trendmicro.ht.com.au** for more details.

[2]Purchase a full version of CA Internet Security Suite 2007 or CA Desktop DNA Migrator 2007 between 01/01/07 and 31/03/07 and be eligible to redeem a $50 cashback from CA. See **ca.ht.com.au** for more details.

[3]Purchase a full version of Norton Internet Security multi-user packs or the Norton All-In-One Pack between 04/12/06 and 28/02/07 and be eligible to redeem $80 cashback from Symantec.
See **symantec.ht.com.au** for more details.

Microsoft Windows Live Onecare

- Protection Plus protects your files and information from the latest viruses, worms, hackers, spyware and online identity scams
- Performance Tune Ups automatically performs tune-ups to help keep your PC running smoothly
- Data Back Up regularly copies your important files, music and memories to CD, DVD, external hard drive, locally networked computers or most USB connected stores devices
- Support offers free phone and email support help anytime you need it, 24 hours a day, 7 days a week
- Install on up to 3 PCs in your household

$99 | U4507

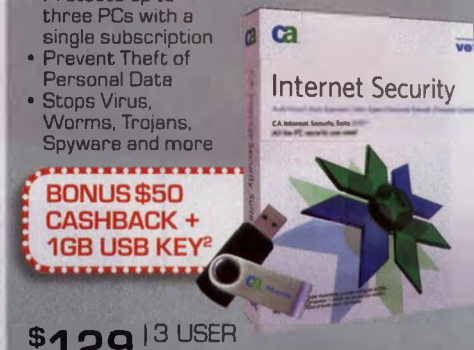
CA Antivirus 2007

- CA Antivirus 2007 protects up to three PCs with a single subscription
- Secure Now provides proactive protection by monitoring critical program functions and settings, and reminding you to keep your security at an optimal level

$69 | U4662

CA Internet Security Suite 2007

- Protects up to three PCs with a single subscription
- Prevent Theft of Personal Data
- Stops Virus, Worms, Trojans, Spyware and more



$129 | 3 USER | U4663

CA Desktop DNA Migrator 2007 - 3 user **$70** | U04

SYMANTEC SMAL

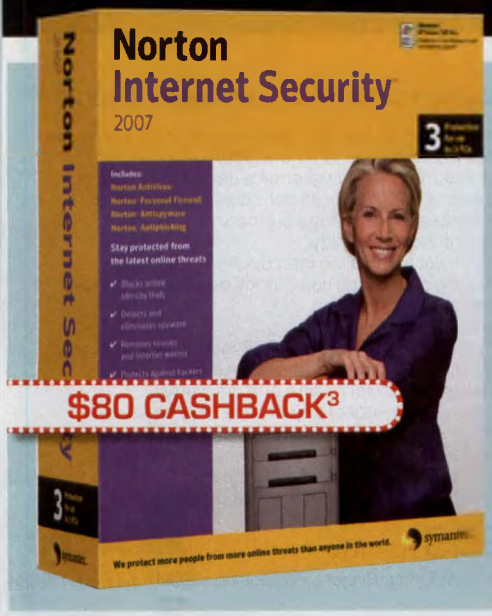
Symantec Business Data Protection Pack

Symantec Backup Exec System Recovery Windows Small Business Server Edition

- Restore your systems anytime, from anywhere to virtually any device
- Set and Protect automated Zero Touch Backup
- Windows Protection

$899 | U1594

Software



Norton Internet Security 2007

symantec.

- Blocks online identity theft
- Detects and eliminates spyware
- Removes viruses and Internet worms
- Protects against hackers
- Automatically detects and blocks viruses, spyware, and worms
- Advanced phishing protection identifies and blocks fraudulent websites
- Rootkit Protection finds and removes hidden threats in the operating system

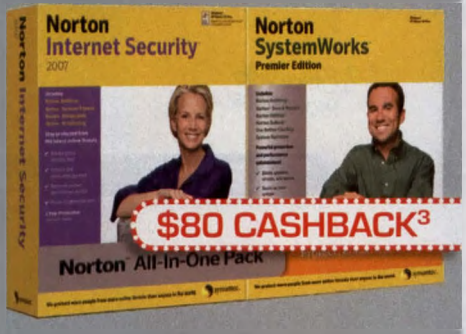
$49 | 3 USER | U0336

BEFORE CASHBACK | YOU PAY $129

Norton All-In-One Bundle

symantec.

Keeps your system secure and optimised.



$88 | U4569

BEFORE CASHBACK | YOU PAY $168

Norton Antivirus 2007 and Confidential 2007 Bundle

symantec.

Protects you against identity theft and secures important files and data.

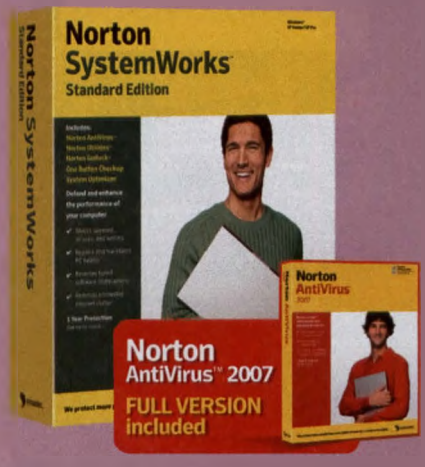
$124 WORTH OF VALUE

$79 | U4668

Norton SystemWorks 10.0

symantec.

- Protects against viruses, spyware, and other threats
- Undoes system crashes, failed software installations, user errors, and more
- Optimises performance and fixes many PC problems
- Removes Internet clutter and unwanted cookies



$49 | U3859

Kaspersky Internet Security 6.0

KASPERSKY

- Real-time monitoring of all data streams, including email, Internet traffic and network connections
- Protection from viruses, Trojans and worms
- Protection from spyware, adware and other potentially hostile programs
- Proactive defense against new malicious programs
- Protection from network attacks and system hijacking
- Blocking of popup windows and banners
- Rollback of changes made by malicious programs on your computer
- Blocking of links to phishing websites
- Trainable spam filtration system

pcw Editor's Choice

February 2007

cnet Editors' Choice OCT 2006

$99

12 MONTH LICENSE | T8781

BUSINESS SOLUTIONS

Symantec Business Protection Pack

Symantec Client Security with Groupware Protection 3.1

- Proactively protects your business from viruses, spyware, hackers and spam
- Protect Servers, Desktops, Laptops and email
- Windows Protection

BONUS DLINK DL-624S HIGH SPEED WIRELESS STORAGE ROUTER

$999 | 10 USER | U1595

symantec.

Multimedia & Design software...

AutoCAD 2007

From conceptual design through drafting and detailing, AutoCAD 2007 enables you to explore ideas like never before.

$6789 | T6087 autodesk

AutoSketch 9 Windows

AutoSketch software provides a complete set of CAD tools for creating professional-quality precision drawings. Two-minute tutorials get you up and running fast.

$229 | P7266 autodesk

web links

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autodesk.ht.com.au
COREL
corel.ht.com.au
MICROSOFT
microsoft.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1]Offer available from 15/1/07 to 15/3/07 via redemption from Adobe. For full terms & conditions see **adobe.ht.com.au**

Microsoft Office Project Standard 2007

- Effectively manage and understand project schedules
- Set realistic expectations with project teams, management, and customers using Office Project Standard 2007 to build schedules, allocate resources, and manage budgets
- Get productive quickly
- The Project Guide, an interactive step-by-step planning aide, helps you quickly master the project management process
- Leverage existing data
- Office Project Standard 2007 integrates smoothly with other Microsoft Office system programs.
- Build professional charts and diagrams
- Analyse and report Project data in professional reports and charts by using the Visual Reports engine, which generates templates for Visio diagrams and Excel charts based on Project data
- Effectively communicate information

$999 | U4487 Microsoft

Microsoft Office Project Professional 2007 **$1740** | U4484

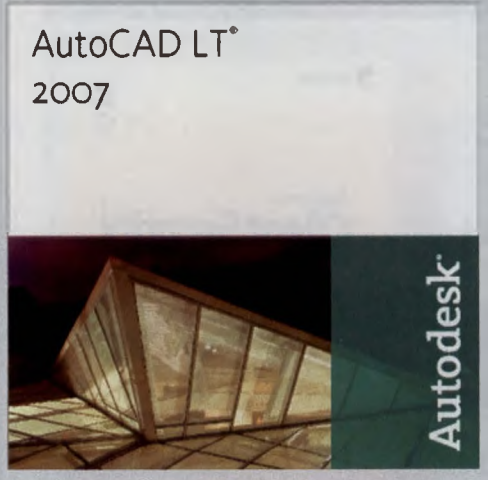
Microsoft Office Visio Professional 2007

- Office Visio Professional 2007 makes it easy for IT and business professionals to visualise, analyse and communicate complex information, systems and processes with clear, compelling diagrams
- Office Visio Professional 2007 includes all of the business diagramming tools included in Office Visio Standard 2007, plus additional comprehensive technical solutions and advanced functionality
- By using Office Visio 2007, people can easily visualize information from multiple data sources to better understand the current state of systems and processes, analyse information visually to highlight key trends and exceptions, and share diagrams broadly for effective and efficient decision-making

$949 | U4494

Microsoft Office Visio Standard 2007 **$445** | U4497

Microsoft



AutoCAD LT 2007 - New Seat

- AutoCAD LT 2007 makes the 2D design process more productive. From drafting to publishing to sharing, new tools and features focus on getting you through your everyday tasks quicker and with fewer errors
- Efficient drafting means across-the-board improvements to help ensure that the time-consuming tasks you do every day won't slow you down
- Simplified data exchange leads to fast, secure collaboration among team members no matter where they are—because the quicker you share, the quicker you finish
- Painless plotting means you can spend more time on the front end designing and less time on plotting

$2075 | T6088 autodesk

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Software

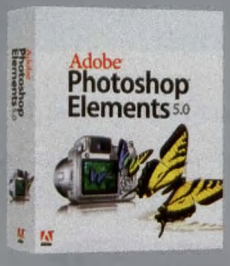
Adobe CS2.3 Premium

Adobe Creative Suite 2.3 Premium software is a highly efficient, unified design environment that combines the latest versions of Adobe's professional design software with Version Cue CS2, Adobe Bridge, and Adobe Stock Photos. It includes all-new Adobe Acrobat 8 Professional software for the most up-to-date Adobe PDF file creation and collaboration and Dreamweaver 8, the industry-leading web development tool.

Now includes all-new Adobe Acrobat 8 Professional plus Dreamweaver 8!
Adobe Creative Suite
BONUS Webdesign Total Training DVD valued at $200[1]
Adobe

$1999 | WIN | U1241 | MAC | U1240

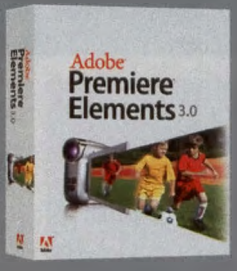
Adobe Photoshop Elements 5.0



Adobe Photoshop Elements 5.0 software combines power and simplicity so you can do more with your photos. Instantly fix flaws or adjust colour and lighting with new advanced controls.

$155 | WIN | U0785

Adobe Premiere Elements 3.0



Adobe Premiere Elements 3.0 software makes creating and sharing impressive home videos a snap. Burn your footage to DVD in two simple steps, complete with a DVD menu and scene index, or easily assemble your movie by rearranging clips with drag-and-drop simplicity.

$169 | WIN | U0781

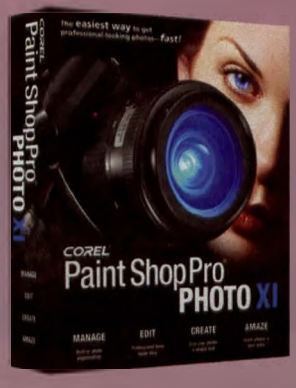
Adobe Photoshop Elements 5 & Premiere Elements 3 Bundle

Adobe Photoshop Elements 5.0 software combines power and simplicity so you can do more with your photos. Instantly fix flaws or adjust colour and lighting with new advanced controls. Quickly drop your photos into customisable layouts and show off your creativity with dynamic web photo galleries created using Flash technology.

$249 | WIN | U0783

Paint Shop Pro Photo XI

- Corel Paint Shop Pro Photo XI builds on the core values set forth by Paint Shop Pro users themselves: easy-to-use yet powerful tools designed with the photographer in mind
- Not only does Paint Shop Pro Photo XI improve on existing features, it also incorporates all-new, one-of-a-kind enhancements including a fully integrated photo organiser - giving users a single application that covers their workflow from start to finish
- Includes a built-in Learning Center to help first time users get started, it's the easiest way to get professional-looking photos - fast!



$199 | U0658 COREL

CorelDRAW Graphics Suite X3

- Transform ideas into professional results with CorelDRAW Graphics Suite X3!
- With this comprehensive graphics suite, you can confidently tackle a wide variety of projects - from logo creation and Web graphics, to multi-page marketing brochures, or eye-catching signs
- From new bitmap-to-vector tracing in Corel PowerTRACE, new photo-editing features in Photo-Paint, new suite-wide learning tools, and enhancements in illustration and page layout, this suite combines design capabilities, ease-of-use, and affordability that cannot be matched by any other graphics software

$659 | T4499 COREL

Office Applications...

BONUS OFFER Valued at $139[1]

When you purchase Vista Business Edition (either upgrade or full) you will

RECEIVE

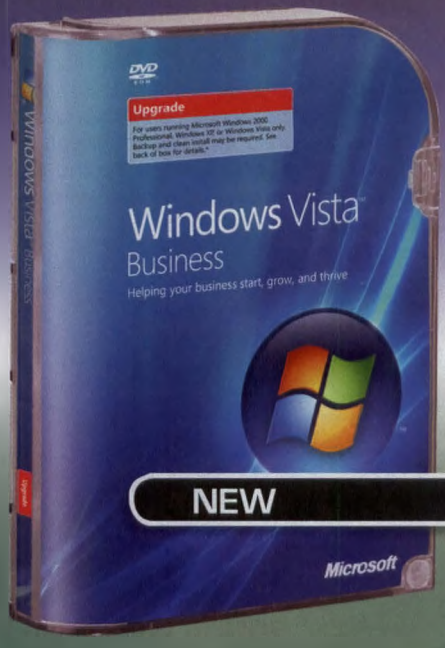
Transcend 1GB USB Drive
(with Ready Boost)

+

2 Months complimentary Online Training on Windows Vista Business supplied by Quick Knowledge

Windows Vista Business DVD Upgrade

Windows Vista Business offers powerful new ways to organise, find, and share information while staying better connected whether you are in the office or on the road. For small businesses, Windows Vista Business will help keep PCs running smoothly and more securely, so you will be less reliant on dedicated IT support.



$379 | U4504

Also Available:
Windows Vista Business | U4503 | **$565**

Microsoft

Windows Vista Home Basic Upgrade

From viewing photos to writing e-mail and browsing the Internet, Windows Vista Home Basic helps you make effective use of your home computer.

$199 | U1323

Also Available:
Windows Vista Home Basic | U1325 | **$385**

Windows Vista Home Premium Upgrade

The preferred edition of Windows Vista for home desktop and mobile PCs – delivering more productivity, security and entertainment at home and on the go.

$299 | U4501

Also Available:
Windows Vista Home Premium | U4500 | **$455**

Windows Vista Ultimate Upgrade

Get the best of work and play with Windows Vista Ultimate. With the power, security and mobility features you need for work, and the entertainment and ease you want for fun.

$495 | U4506

Also Available:
Windows Vista Ultimate | U4505 | **$750**

web links

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adobe.ht.com.au
MICROSOFT
microsoft.ht.com.au
FILEMAKER
filemaker.ht.com.au
NUANCE
nuance.ht.com.au

Please note: All purchases subject to terms & conditions and returns policy. Delivery charges may apply. Not all items stocked in store but available for pick-up/delivery.

[1]Offer closes 30/04/07. Only available to customers that have up to 4 PCs or less in their business, does not extend to small business that have a server and require installation on a server. See specially marked boxes for full terms and conditions or visit **www.smallbusinessoffers.com.au**

PDF Converter Professional 4 + Dragon NaturallySpeaking 9 Bundle

ScanSoft PDF Converter 4, instantly turns PDF files into fully- formatted documents, forms and spreadsheets.

With Dragon NaturallySpeaking Standard you can talk to your computer and watch words quickly appear in documents and e-mails.

$249 | U4679

NUANCE
ScanSoft Imaging Solutions

PaperPort Professional 11

PaperPort Pro is a cost effective way for everyone in your office to scan, organise, find and share all of your documents.

$349 | T7694

NUANCE
ScanSoft Imaging Solutions

Order online or by phone, pick up in-store to save delivery charges

Microsoft Office Small Business 2007 Upgrade

Microsoft Office Small Business 2007 is the complete, powerful and easy-to-use productivity and contact management suite. It offers new tools to help employees at small businesses work more efficiently and effectively so they can deliver better customer service. Includes: Microsoft Office Word 2007, Excel 2007, Outlook with Business Contact Manager 2007, Powerpoint 2007 and Publisher 2007.

$499 | U1828

Microsoft Office

Also Available:
Microsoft Office Small Business 2007 | U1827 | **$749**

Microsoft Office Professional 2007 Upgrade

Microsoft Office Professional 2007 is a complete, easy-to-use suite of productivity and information management software to help business professionals save time and stay organised. Powerful features centralise customer, sales and project information in one place so users can respond more quickly to opportunities. Includes all the features of Office Small Business Edition, as well as Microsoft Office Access 2007.

$549 | U1831

Also Available:
Microsoft Office Professional 2007 | U1830 | **$849**

BONUS OFFER
Valued at $229[1]

When you purchase Office 2007 Small Business Edition (either upgrade or full) of Office 2007 Professional edition (either upgrade or full) you will

RECEIVE

1 hour onsite installation from Quick Knowledge

+

2 Months complimentary Online Training on Microsoft Office supplied by Quick Knowledge

Microsoft Office Home and Student

Quickly and easily create great looking documents, spreadsheets and presentations—plus manage information and notes in one place. Including Word 2007, Excel 2007, PowerPoint 2007 and OneNote 2007 applications.

$249 | U1823

Microsoft Office Standard 2007 Upgrade

For home and home office, create great-looking spreadsheets, presentations and manage e-mail. Including Word 2007, Excel 2007, PowerPoint 2007 and Outlook 2007 applications.

$399 | U1826

Also Available:
Microsoft Office Standard 2007 | U1825 | **$690**

Microsoft Office Ultimate 2007 Upgrade

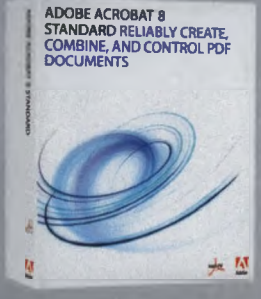
Share information across geographic locations and companies, while both on and offline. Including Word 2007, Excel 2007, PowerPoint 2007, OneNote 2007, Outlook 2007 with Business Contact Manager, Publisher 2007, Access 2007 and Groove 2007.

$939 | U1834

Also Available:
Microsoft Office Ultimate 2007 | U1833 | **$1175**

Adobe Acrobat 8 Standard

- View, print, and search Adobe PDF files
- Combine files from multiple applications into a single PDF document



$469 | WIN | U1222

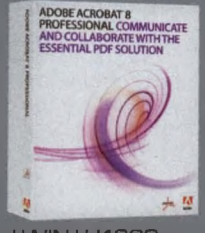
Adobe

Adobe Acrobat 8 Professional

All the features of standard edition plus:

- Permanently delete sensitive information, including specific text or illustrations, with redaction tools
- Enable Adobe Reader^ users to digitally sign PDF documents

^Requires Adobe Reader 7.0 or 8.



$699 | WIN | U1228
| MAC | U1227

Adobe

FileMaker Pro 8.5

- Convert your Microsoft Excel spreadsheets and other files to FileMaker databases
- Intuitive point-and-click interface helps you customise solutions and share them with ease

$459 | T9083

FileMaker.

harristechnology

1 - 28 February 200

Windows Vista Business

$565 | FULL | U4503

$379 | UPGRADE | U4504

Windows Vista Ultimate

$750 | FULL | U4505

$495 | UPGRADE | U4506

LOCATIONS

NSW
North Ryde
45 Epping Rd

North Sydney
G Floor Bayer Building
275 Alfred St

Parramatta
46 George St

Alexandria
Unit 1/110 Botany Rd

VIC
Hawthorn East
612 Burwood Rd

ACT
Fyshwick
29-31 Townsville St

QLD
Fortitude Valley
356 St Pauls Terrace

WA
Osborne Park
426 Scarbourough Beach R

STORE TRADING HOURS
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North Ryde & Hawthorn
8am - 7pm
All other stores 8am - 6pm

Saturday
9am - 5pm

Sunday
10am - 5pm (WA closed)

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Internet. Voice. Entertainment - All at Once. Anywhere.

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WRT300N Wireless-N Broadband Router

- Up to 4X the range for whole-home coverage that virtually eliminates dead spots.
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*Torrey Pines Research results, *Wilhelm Imaging Research results; go to www.epson.com.au